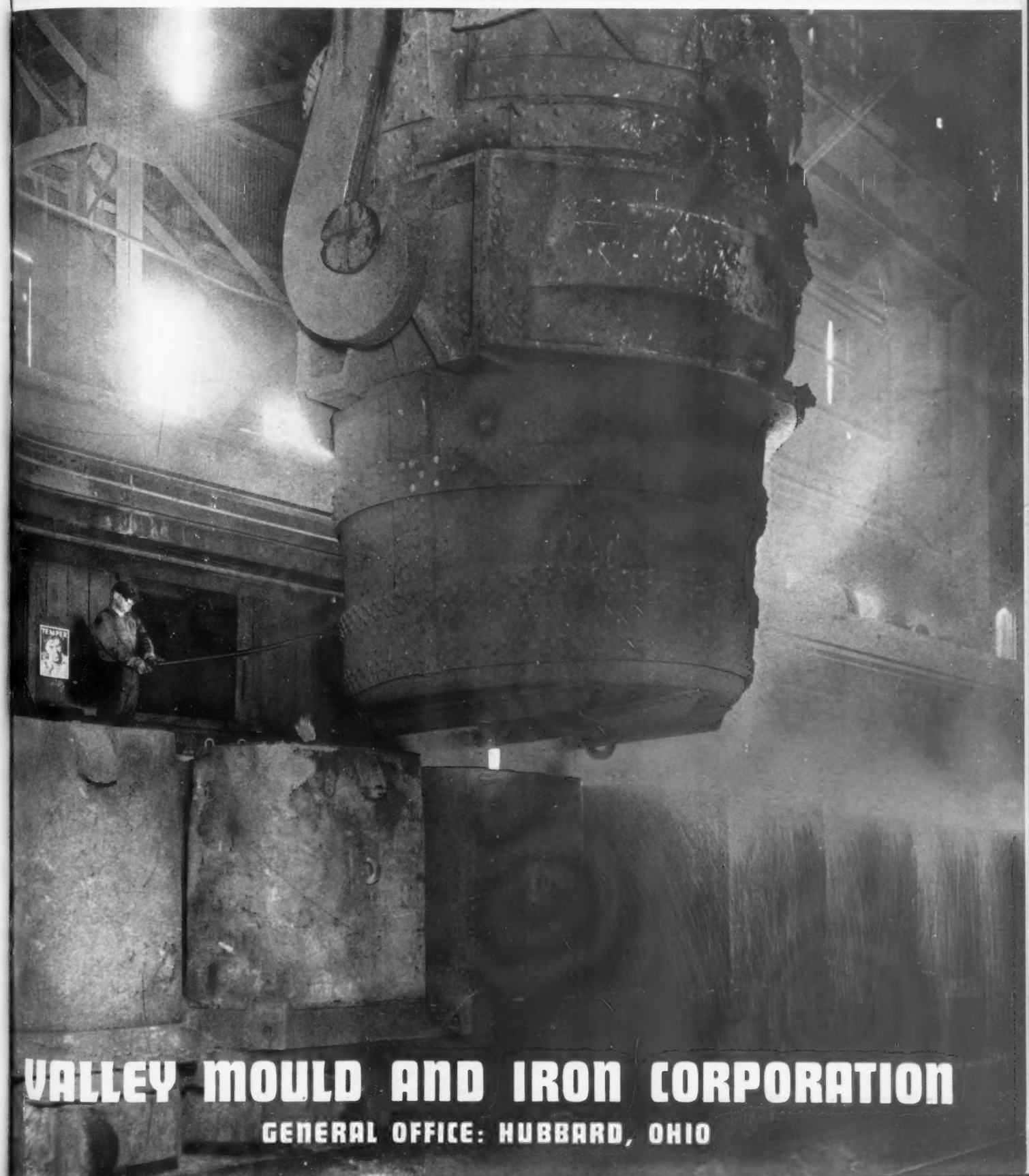
FEB 1 1938

January 31, 1938

STEEL

PRODUCTION • PROCESSING • DISTRIBUTION • USE

FOR FORTY-EIGHT YEARS—IRON TRADE REVIEW



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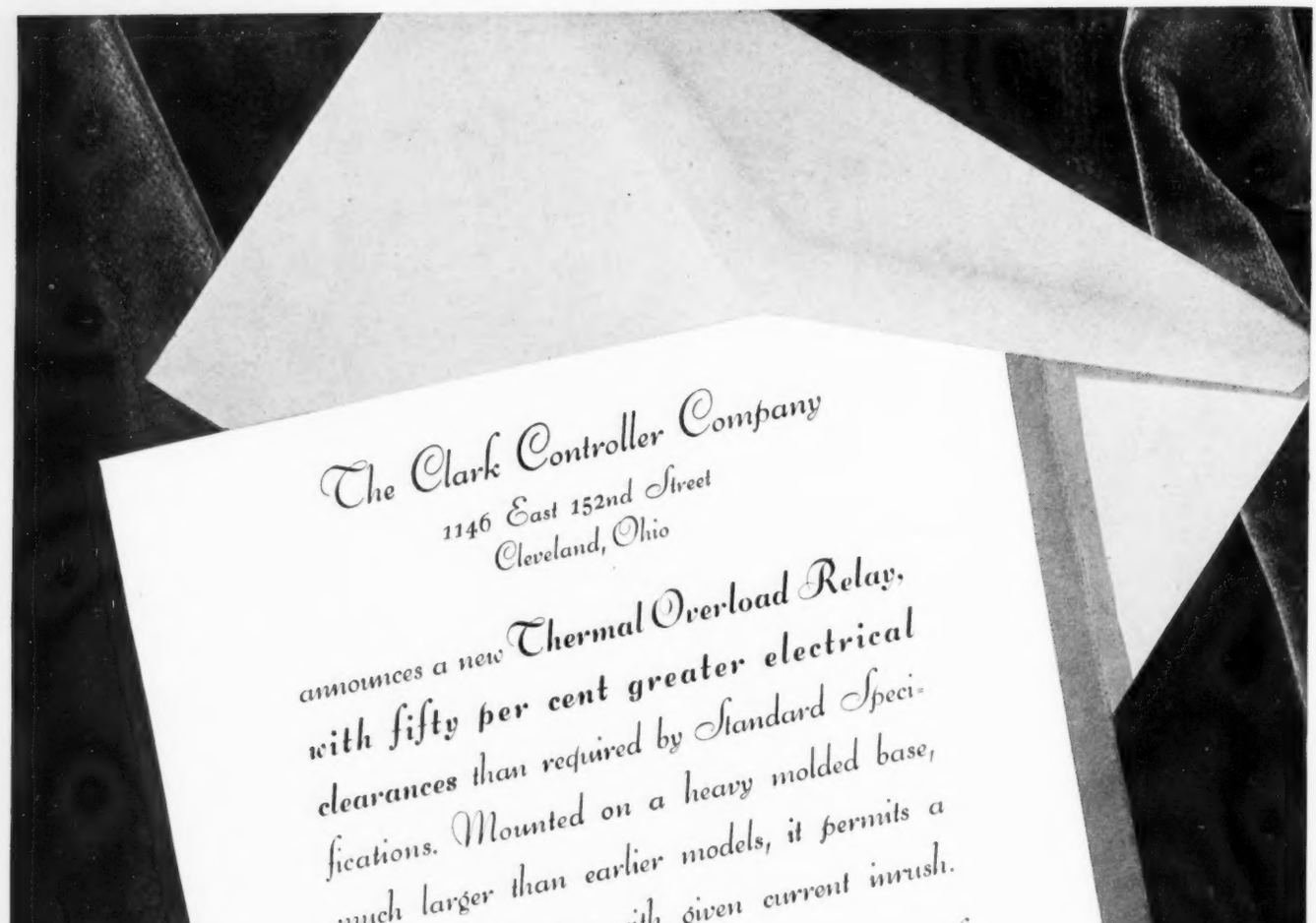

The Clark Controller Company
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Cleveland, Ohio

announces a new **Thermal Overload Relay,**
with fifty per cent greater electrical clearances than required by Standard Specifications. Mounted on a heavy molded base, much larger than earlier models, it permits a longer starting time with given current inrush.

Oversize silver to silver contacts, vibration proof mounting, quick break tripping, easily determined heater ratings, true eutectic alloy, protection from air currents, are features of this Debutante in the Clark-engineered line of Electric Controls.

Your inquiry for further details will be cordially welcomed by our nearest office.

R. S. V. P.

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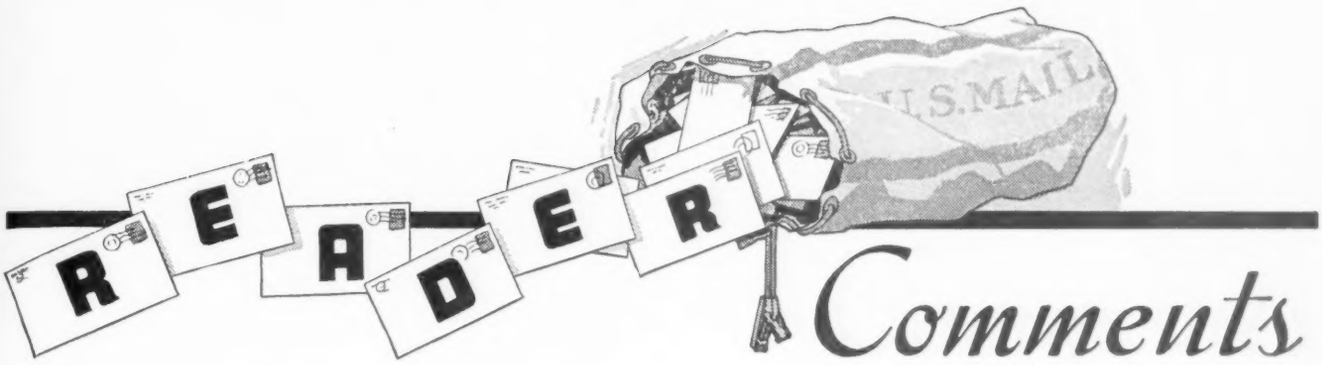


Comments

Readers are invited to comment upon articles, editorials, reports, prices or other editorial material appearing in STEEL. The editors cannot publish unsigned communications, but at their discretion may permit a writer to use a pseudonym when a bona fide reason exists for withholding his identity. Letters should be brief—preferably not exceeding 250 words.

How Tax Burden Hurts

To the Editor:

There has been considerable discussion during recent months about the harmful effect of taxation. This matter was brought rather forcibly to our attention in a letter just received and, believing it is self-explanatory and may be of equal interest to you, we quote the complete letter as follows:

"We regret very much that your account, which dates back to August, has not been paid as yet, and while the amount is not large, we find that a considerable amount is necessary to be paid in taxes before the end of the month. This covers unemployment insurance taxes, old age taxes, excise taxes, etc., and with the heavy drop in business the past several months, it will be a little difficult to take care of these at this time.

"However, we have a large order going through, which should be delivered about the first of the month, and just as soon as it is, we shall arrange to forward a check to you."

A short editorial about this might read somewhat as follows:

"How can business flourish and expand when payment of taxes prevents business from paying its just debts?"

C. P. DAVIS

Manager,
Winfield H. Smith Inc.,
Springville, N. Y.

STEEL Sets the Pattern

To the Editor:

I am always interested in the things STEEL does, as it undoubtedly has set the pattern for a number of trade magazines. I am sure the reference matter the Jan. 3 issue contains will make it a valuable publication throughout the year.

R. C. BYLER

Advertising Manager,
S K F Industries Inc.,
Philadelphia

You have every reason to be proud of your annual issue of STEEL. It is, I believe, the best ever. We have a special file for the annual issues which we keep for handy reference.

GEORGE P. THOMAS

President,
Thomas Machine Mfg. Co.,
Pittsburgh

You have every reason to be proud of the Jan. 3 issue of STEEL. It is an achievement in editorial accomplishment and forceful advertising.

ALFRED FISCHER

Advertising Manager,
Semet-Solvay Engineering Corp.,
New York

I have read a good many parts of your Jan. 3 issue of STEEL and found much of interest to me within its covers. It is hardly necessary for me to tell you that this issue represents a very fine job of make-up and printing, as you have, no doubt, already heard this from many other quarters.

EDWIN C. RYAN

Advertising Manager,
New York & New Jersey Lubricant Co. Inc., New York

We have carefully perused the annual issue of STEEL; in fact, this has become a yearly event. Frankly, knowing as little as we do about publication problems, we marvel at the extensiveness of this important annual number.

The steel and metalworking industries, as a whole, can be proud of the effort put into this issue, particularly the compilation of statistics dealing with numerous subjects of importance to the field.

W. J. RAMSEY

Advertising Manager,
Mathews Conveyer Co.,
Ellwood City, Pa.

STEEL has good cause to be proud of its Jan. 3 issue. I have examined it with great interest and find much in it of value.

W. C. MCMAHON

Vice President,
Columbus Malleable Iron Co.,
Columbus, O.

Wage Rates Out of Joint?

To the Editor:

Here in the South I live in the midst of industry's most thoroughly lost domestic market. Here, after the average farmer meets costs, his cash income is less than a dollar a day; excellent industrial labor can be had for a couple of dollars. Economic contrasts became rather striking when STEEL brought the news that the average wage of the steel industry was $6.64 for an eight-hour day.

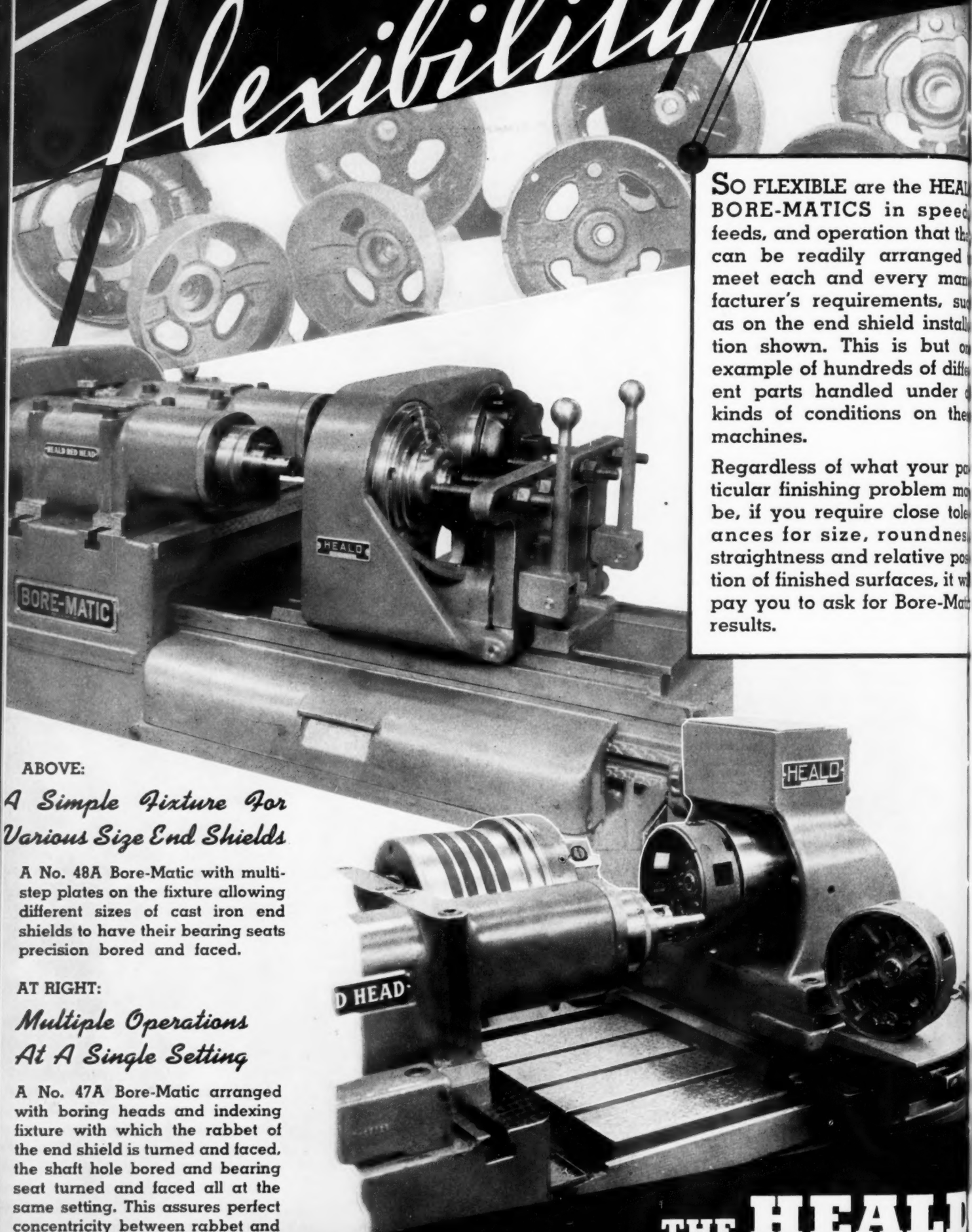
When prices for farm products took a nose dive last fall, all American industry lost an enormous market, not only in the South but all over the nation. Nearly a fourth of the population joined the ranks of the underprivileged, swelling the ranks of those barely able to absorb any of the products of industry to about half the population.

Never in the history of the nation has wealth been so abominably distributed.

In the light of the fact that the

(*Please turn to Page* 22)

Flexibility



SO FLEXIBLE are the HEAL BORE-MATICS in speed feeds, and operation that th can be readily arranged meet each and every man facturer's requirements, su as on the end shield install tion shown. This is but o example of hundreds of diff ent parts handled under kinds of conditions on the machines.

Regardless of what your pa ticular finishing problem m be, if you require close tol ances for size, roundnes straightness and relative po tion of finished surfaces, it w pay you to ask for Bore-Ma results.

ABOVE:

A Simple Fixture For Various Size End Shields

A No. 48A Bore-Matic with multi-step plates on the fixture allowing different sizes of cast iron end shields to have their bearing seats precision bored and faced.

AT RIGHT:

Multiple Operations At A Single Setting

A No. 47A Bore-Matic arranged with boring heads and indexing fixture with which the rabbet of the end shield is turned and faced, the shaft hole bored and bearing seat turned and faced all at the same setting. This assures perfect concentricity between rabbet and shaft hole.

THE HEALD
MACHIN
COMPAN
WORCESTER, MASS. U. S.

STEEL

FOR FORTY-EIGHT YEARS—IRON TRADE REVIEW

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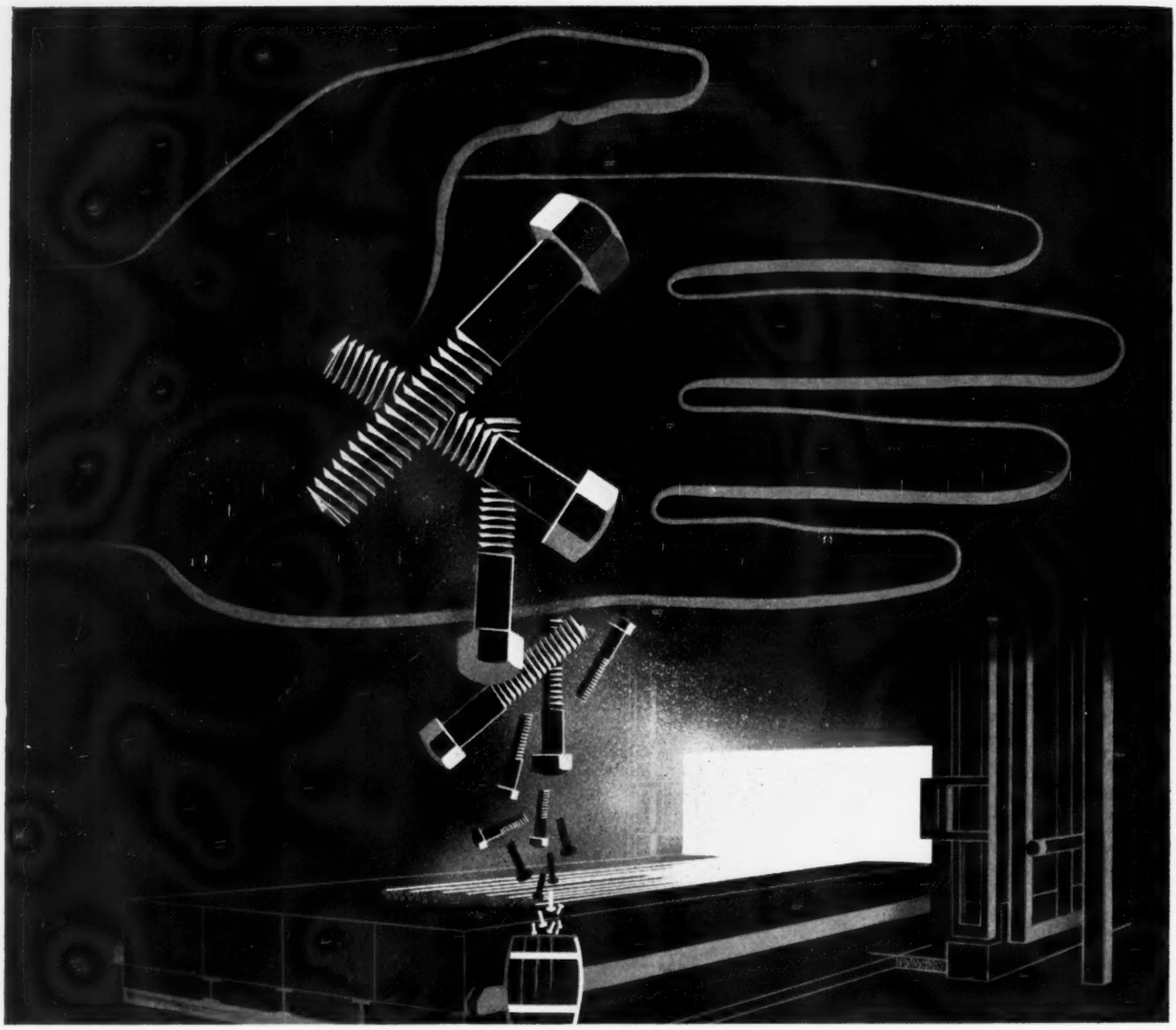

LIKE PEAS FROM A POD

STEEL of uniform properties is the first key to a uniform product and to steady, economical production.

By using Chrome-Moly steel (SAE 4140), a manufacturer was able to heat treat 1/2" to 2" bolt stock in tonnage lots and still hold physical properties to close and difficult specifications. What's more, the steel was machinable enough after heat treatment to allow thread-cutting with a standard automatic die-head.

Uniform response to heat treatment is but one of the many qualities of Moly steels that help to simplify production problems.

Any engineering or production head interested in turning out a better product at lower cost will do well to look deeply into Moly steels and irons. Our technical book, "Molybdenum," is free for the asking. Climax Molybdenum Co., 500 Fifth Ave., New York.

PRODUCERS OF FERRO-MOLYBDENUM, CALCIUM MOLYBDATE AND MOLYBDENUM TRIOXIDE

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MOLY

As the Editor Views the News

IT IS unfortunate for companies and individuals who are trying to co-operate with the government administration that President Roosevelt is so inconsistent in his frequent statements of principle. In advising against wage cuts, he said (p. 35), "Those who believe in the profit system must recognize that those who get the profits when business is good must bear the losses when business temporarily is slack." True, very true! Business has always tried to do that by storing up reserves for the rainy day. But at Mr. Roosevelt's insistence, a law was passed to encourage business to distribute most of its profits.

• • •

As a result many companies encountered the present recession with insufficient reserves to cushion the shock of sharply curtailed business volume. Considering this fact, industry generally has done a remarkably good job of easing the distress of employes by spreading work. That they have not been able to do better is the fault of President Roosevelt and his tax advisors, and not of the management of industry. The President, by his own action, has deflated industry's age-old cushion of reserves and thus has tied prices and wages together more rigidly. Costs, embracing wages, and prices (p. 27) are more closely related than ever before.

Costs and Prices

• • •

Manufacturers of heating, ventilating and air conditioning equipment held their fifth annual exposition in New York last week. They reported that upward of $100,000,000 of air conditioning equipment alone was sold in 1937 (p. 17) and they predict an even greater volume of sales for 1938. This is favorable news for scores of producers of ferrous and nonferrous materials and parts. . . . Encouraging also is the recommendation that congress authorize (p. 17) the laying down of two battleships and two cruisers in 1938. . . . Of interest also from the standpoint of steel consumption is the tonnage required for vehicular tunnels. Approximately 101,400 tons of iron and steel (p. 20) are involved in the shell of the Lincoln tunnel, and several similar projects are under construction or contemplated. . . . Iron and steel exports, excluding scrap, totaled 306,647 gross tons in December (p. 18), maintaining the high level of recent months.

Uses for Iron, Steel

• • •

A world movement toward the use of lower grade ores for ironmaking is in progress. Two new blast furnaces in England will operate on North Lincolnshire ores (p. 23), which contain less than 25 per cent iron and probably are the leanest ores used commercially for pig iron. Italy is reclaiming great piles of "scoria," a material containing about 50 per cent iron which was a by-product of the iron industry of ancient days. Italy also is drawing upon ore from the island of Elba. . . . Every steelmaker will enjoy the brief inside story (p. 23) of how the idea for building an iron and steelworks in India was conceived. It is the story of Jamshedpur, an "Indianized Pittsburgh."

Indianized Pittsburgh

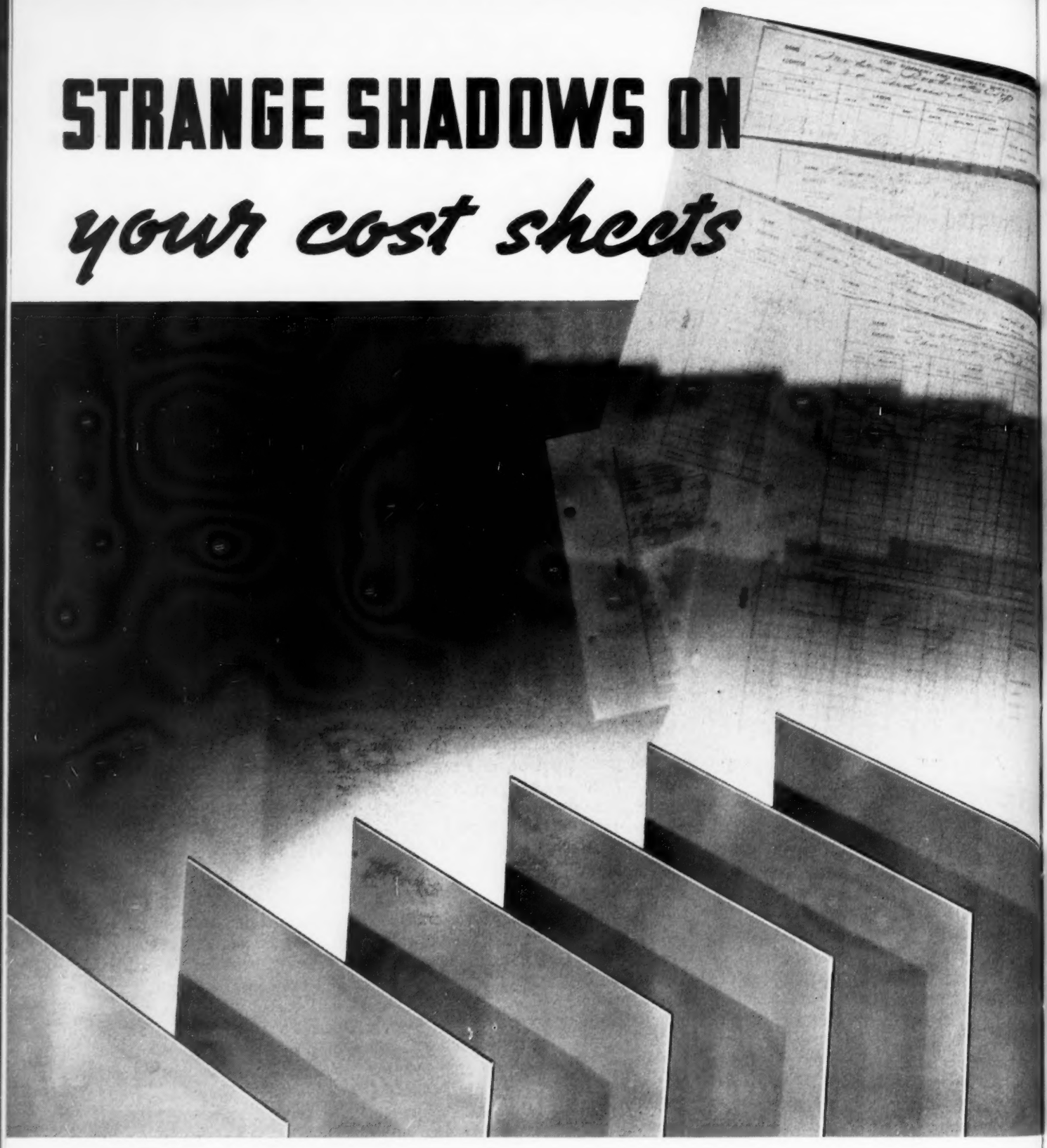
• • •

Improvements in resistance welding were reported at the winter meeting (p. 38) of the American Institute of Electrical Engineers. These include refinements in the control of time, pressure and current and the use of machines equipped with die-type electrodes or tips made of special electrode materials. Improved cooling media and many new electrode alloys are available. . . . The problem of condensation and damp walls has been an obstacle to progress in the development of prefabricated steel houses. Research work (p. 40) is tending to solve some of these difficulties and is paving the way toward increased sales of this type of housing. The idea of prefabrication is taking hold slowly, but steadily. Today's experience will count heavily in the future.

Research Paves Way

E. L. Shaner

STRANGE SHADOWS ON *your cost sheets*



LOOK for them. What caused this item of expense or that delay in time?

Plain steel can cast some strange shadows on cost sheets when all factors affecting its use are not properly taken into consideration.

Don't think, for example, that because your specifications call merely for flat bars, plates or sheets that opportunities for worthwhile economies do not exist.

That's where they're often found when looked for by the practiced eye of the specialist. Consult an Inland engineer or metallurgist on your very next steel order. If he can save money or time, the profit is yours. In any event, you risk no expense or obligation in making use of his efforts.

INLAND STEEL CO.

38 SOUTH DEARBORN STREET, CHICAGO

Detroit • Kansas City • Milwaukee • St. Louis • St. Paul

SHEETS STRIP TIN PLATE BARS RAILS
TRACK ACCESSORIES PLATES FLOOR PLATES
STRUCTURALS PILING REINFORCING BARS

Steel Makes Light Profit in Fourth Quarter; Prices "Firm as Gibraltar"

■ DESPITE the recession, leading iron and steel producers issuing financial statements last week reported profits for the fourth quarter of 1937. Although fourth quarter earnings were down sharply from the preceding three quarters, results for the year were fairly satisfactory.

United States Steel Corp. reported the largest net income for a year since 1930 and the highest average operations since 1929. Bethlehem Steel Corp.'s volume of business was second largest in history and net was the highest since 1929.

E. G. Grace, president, in commenting on Bethlehem's report, declared steel prices cannot be reduced materially without adversely affecting wages, a large item of costs. He pointed out that if Bethlehem's billing prices last year had been reduced by 8 per cent, the company would not have made a cent of profit.

He explained that in 1937 Bethlehem's net income on a gross business of $418,000,000 and after all charges was $31,819,596, less than 8 per cent on the gross. This was about 6 per cent on investment.

Bethlehem management has not proposed any wage reductions nor discussed the subject with the employes, he said, adding he hoped it would not be necessary.

Must Sell Above Cost

"It is interesting to note, however, that the wage rates now prevailing are the highest of all time, with the average hourly earnings 31 per cent above 1929, and with more actual money in the pay envelopes in 1937, when the men averaged 37 hours per week, than in 1929, when they averaged 48 hours per week.

"It is also necessary to bear in mind some other considerations," Mr. Grace continued. "No business could long survive selling its products at a price less than the cost of producing them. It would seem axiomatic to me that it was an obligation on the part of management to the owners of a business to see to it that selling prices were related to costs in a manner to provide income in excess of outgo. In others words, to insure a solvent business, we must balance our budget."

While pointing out volume last year was the second largest in history, he said "present indications are that the volume this year will be substantially reduced."

He added: "I wish it were possible to have a more uniform rate of operations in our business. Ours is a basic industry, however, depending upon a multiplicity of consuming and processing industries for the consumption of its products.

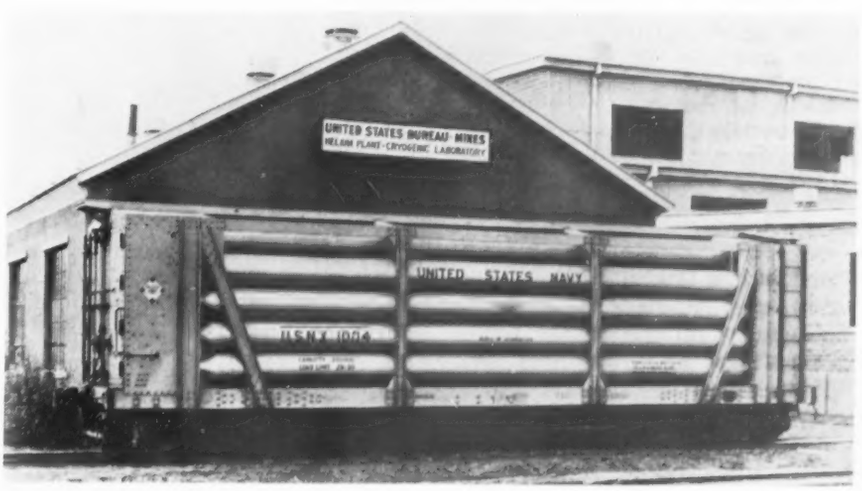
"The character of our business precludes any important accumulation of manufactured products awaiting orders. It must, therefore, be operated against current demand which makes it impracticable for our industry to do much toward establishing a uniform rate of operations."

He said that at present incoming business was at the rate of 26 per cent, or 6 points under Bethlehem's current ingot rate of 32 per cent. With little in sight from the railroads, and the automotive and building industries, he could not see any material improvement immediately.

He added he did not think present lack of demand is due to prices and emphasized that there has been no pressure from consumers for lower prices. He said insofar as he could observe "steel prices were as firm as the Rock of Gibraltar."

Contributing to present operations is a good backlog of orders. Orders on hand Dec. 31, 1937, of $93,470,063 were higher in dollar value than at any time in 1929, he said. He attributed this in a large measure to

Steel Car Designed for Helium Pipe-Tanks



■ **Another step in the development of bureau of mines' method of handling helium gas is represented in the construction of this steel car, with the long pipe-tanks an integral part of the car. The helium is contained in these tanks under pressure of 2000 pounds per square inch, and when expanded at normal atmospheric conditions will occupy 200,000 cubic feet. The car is shown at the bureau's Amarillo, Tex. plant. Wide World photo**

the fact that Bethlehem now has a much larger and more diversified line of products than in 1929.

Having just about concluded a program amounting to approximately $90,000,000 in the past three years, Bethlehem, he said, has no further large expansion program in sight. Company entered the new year with construction authorized and in course of completion amounting to $4,548,700. Bethlehem now has a rated capacity of 10,040,000 tons, compared with 9,360,000 a year ago.

Bethlehem earnings on investment last year were 6.03 per cent, and this brought the average for the past five years up to 2.45 per cent. In 1936, the earnings were at a rate of 3.34 per cent; 1935, at 1.91; 1934, at 1.19; and in 1932 there was a loss of .32 per cent.

Fourth quarter net income was $4,253,329, equal to 76 cents a common share. Third quarter earnings were $9,249,560. In 1936, net was $13,901,006.

Directors last week declared a $1.75 dividend on the 7 per cent preferred and 25 cents on the 5 per cent preferred, both payable April 1 of record March 4. No action was taken on common dividends.

Operations during the fourth period averaged 45.7 per cent of capacity, compared with 85.1 per cent in the third quarter. For the entire year production averaged 77.7 per cent, against 64 per cent in 1936.

U. S. STEEL'S 1937 NET INCOME HIGHEST SINCE 1930

United States Steel Corp. reports net income for 1937 was $99,930,836, before allowances for federal surtax on undistributed profits. This represents the highest net since 1930 and is nearly double the 1936 figure of $50,798,900.

Earnings for the fourth quarter were $4,577,983, lowest of any period in 1937, compared with $20,923,995 for the fourth quarter of 1936.

The quarterly dividend of $1.75 on preferred was voted to be paid Feb. 19, of record Jan. 28. No action was taken in respect to a dividend on common.

During the year all accumulated arrearages, $9.25 a preferred share, were paid. A dividend of $1 a common share, the first in five years, was paid last December.

Final quarter earnings were equal to $1.27 a preferred share, while the indicated net for the year was equivalent to $8.59 a common share.

Operations for the fourth quarter reflected the continued decline in demand for steel products, which reached its lowest level in December when production was only 32.3 per cent of capacity.

Finished product output for the fourth quarter averaged 41.3 per cent of total capacity, compared with 73.6 per cent in the third quarter and 85.5 per cent for the first half of 1937. For the entire year the average was 71.4 per cent, better than any year since 1929 with an average of 89.2 per cent.

The comparative earnings and income statement shows:

	Fourth quarter		Year ending Dec. 31	
	1937	1936	1937	1936
Earnings	$18,716,056	$36,876,696	$165,906,342	$112,662,715
Net income earned on capital stock before allowances for federal surtaxes on undistributed profits	4,577,983	20,923,995	99,930,836	50,798,900
Federal surtax on undistributed profits	500,000	215,544	5,000,000	215,544
Dividends paid:				
On preferred, for current year			25,219,677	25,219,677
For accumulated arrearages			33,326,002	25,219,677
On common			8,703,252	

Total capital outlays for modernization and rehabilitation of plants, additional facilities and equipment, and for payment of maturing bonds and other capital obligations of subsidiary companies totaled approximately $133,600,000. Unexpended balance of appropriations for rehabilitation of plants is about $80,000,000, all of which is scheduled for expenditure this year. (See also p. 27.)

At the close of the year approximately 236,000 employes were on the payroll, this being the low point of the year. Comparative figures for 7937 and 1936:

	1937	1936	Per cent Increase
Average number of employes	261,293	222,372	17.5
Total payroll	$442,929,918	$338,866,121	30.7
Average earnings per employe per hour worked	86.4c	73.7c	17.2

Reduced activities necessitated spreading the work, reducing the average number of hours worked per employe.

Shipments of steel products during the fourth quarter were 1,868,621 tons, a decline from the previous quarter of 44.1 per cent. For the year shipments totaled 12,825,467 tons, a rate of 71.5 per cent of capacity, and exceeding 1936 by 18.5 per cent. At present shipments are around 32 per cent of capacity.

INLAND STEEL'S 1937 PROFIT EQUALS $8.05 PER SHARE

Inland Steel Co., Chicago, reports 1937 net income was $12,665,317, after all charges including federal surtax on undistributed profits. This is equal to $8.05 a share on its 1,573,950 shares of no par capital stock, and compares with $12,888,647 net in 1936, equal to $8.59 a share.

Fourth quarter net was $867,571, before tax on undistributed profits. This compares with $4,433,375 in the third quarter, and $3,867,625 in the fourth quarter of 1936.

Directors declared a $1 dividend payable March 1 of record Feb. 15.

SHEET & TUBE'S EARNINGS FOR YEAR $12,190,649

Youngstown Sheet & Tube Co. showed a profit for 1937, after all charges including depreciation and depletion, of $12,190,649, compared to net profit of $10,564,501 for 1936, according to preliminary report of the company's consolidated income account. Net earnings for the fourth quarter of 1937 were $1,696,022, after usual year-end adjustments.

RUSTLESS DOUBLES 1936

Rustless Iron & Steel Corp., Baltimore, shows net income of $713,124 in 1937, equivalent, after preferred dividends, to 77 cents a common share. In 1936, net was $350,707, equal to 43 cents a common share after deductions for preferred dividends.

Income for fourth quarter dropped to $82,212 after charges and taxes, equal to 8 cents a share on common. Third quarter net was $199,920, equal to 22 cents a common share.

EARNINGS, DIVIDENDS

Otis Steel Co., Cleveland, has declared a regular quarterly dividend of $1.37½ per share on convertible first preferred stock, payable March 15 to record of March 1.

With a fourth quarter profit of $54,516, after all charges except undistributed profits surtax, Carpenter Steel Co., Reading, Pa., reports earnings for the period are equal to 15 cents a share on 360,000 shares of $5-par stock. The company's fiscal year ends June 30 and this brings its first-half earnings up to $255,115, equivalent to 71 cents a share.

Allegheny Steel Co., Brackenridge, Pa., declared the regular quarterly dividend of $1.75 a share, payable March 1 to record Feb. 15.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., declared a dividend of $1 a share on common and participating preferred, both payable Feb. 28 to record Feb. 8.

Congress Given Armament Plans

■ LAST week the President sent his rearmament program to congress in a message that included seven specific recommendations and one general. He recommended authorization of $8,800,000 for additional army anti-aircraft material, and that $6,800,000 of this sum be appropriated for the fiscal year 1939. He also asked that $450,000 be appropriated for the better establishment of the enlisted army reserve, and $6,080,000 for making gages, dies and other equipment for manufacturing army material, of which $5,000,000 would be spent in the fiscal year 1939.

The message asked for a $2,000,000 appropriation toward making up deficiencies in army ammunition supply; a 20 per cent increase in the existing authorized building program for increases and replacements in the navy department; and an authorization by congress to allow laying down of two additional battleships and two additional cruisers in 1938.

Congress also was asked to appropriate $15,000,000 for construction of experimental types of small vessels in line with new naval developments.

"I believe that the time has come for the congress to enact legislation aimed at the prevention of profiteering in time of war and the equalization of burdens of possible war," he said. "Such legislation has been the subject for many years of full study in this and previous congresses."

Representative Vinson, Georgia, chairman, naval affairs committee, last Friday introduced a bill for a new navy building program authorizing a 20 per cent increase in all combatant categories. Bill provides for 47 more combatant ships, 22 auxiliary vessels, 1000 additional airplanes. Cost would be $800,000,000.

Task in Salvaging $30,000 Worth of Bridge Scrap

■ While the removal of the twisted form of the historic 40-year old Falls View bridge from the ice-choked Niagara Gorge is baffling engineers, it is estimated that a complete salvage of the bridge would be valued at approximately $30,000 in the scrap market.

The spidery span which linked the United States with Canada was 1200 feet long, and consisted of 2300 tons of light structural sections. Its floor level was 190 feet above the gorge. Scrap dealers say the bridge is a choice bit of material, but the majority are skeptical that a profit can be realized if all the costs of derricking the metal from the deep-pitted gorge are charged against the purchaser.

Engineers were undecided on what action to follow in salvaging the wreckage. Quick action, while the ice is still firm, is believed necessary. If the ice breaks and the bridge falls into the swiftly moving water probably none of the steel will be saved.

300 Exhibitors at Ventilating Show

■ INCREASING importance of the heating, ventilating and air conditioning field as an outlet for steel and nonferrous metals was reflected at the Fifth International Heating and Ventilating Exposition, Grand Central Palace, New York, Jan. 25-28.

It was by far the largest to date, with 300 exhibitors, attracting more than 28,000 spectators, a record-breaking attendance.

B. S. Boyden, retiring president of the American Society of Heating and Ventilating Engineers, under whose auspices it was held, asserted that the industries represented had just completed the best year in their history, reporting a 50 per cent increase in business over 1936. They look forward to even greater volume this year.

Upward of $100,000,000 worth of air conditioning equipment alone was sold last year, he said, and this did not include "a vastly larger amount" spent for heating systems in homes, large buildings, industrial plants, and ventilating equipment of all kinds.

Several steel companies had attractive exhibits, including United States Steel Corp., Republic Steel Corp., Jones & Laughlin Steel Corp., Bethlehem Steel Co., Youngstown Sheet & Tube Co., and American Rolling Mill Co.

E. H. Gurney, president, Gurney Foundry Co. Ltd., Toronto, Ont., was elected president of the society; J. F. McIntire, vice president, United States Radiator Corp., Detroit, was elected first vice president; and Prof. F. E. Giesecke, director, engineering experiment station, Texas Agricultural and Mechanical college, second vice president. Walter L. Fleisher, consulting engineer, New York, was named chairman of the committee on research.

AS WESTINGHOUSE SEES AIR CONDITIONING MARKET

■ Manufacturers' market for residential air conditioning equipment approximates $106,000,000, W. H. Stangle, in charge of Westinghouse Electric & Mfg. Co.'s home air conditioning activities, declared at a recent dealers' meeting in Mansfield, O. New housing constitutes the major share of about $85,000,000.

Mr. Stangle's estimates are based on a comprehensive market survey. This analysis, he said, reveals:

Estimated annual saturation market for completely installed systems in new houses is approximately $250,000,000.

Estimated manufacturers' billings

in new houses at 33 1/3 per cent of installed cost for the average annual saturation is about $85,000,000.

Rehabilitation of old house heating provides another large market conservatively estimated at $21,000,000.

One-family houses in the United States total 9,300,000 of which 15.4 per cent need substantial repairs. Average annual new one-family house construction is estimated at 280,000, based on average actual construction from 1920 to 1936. During this period 1925 was high year with 546,000 new dwellings; 1934 was low with 41,000.

Every House in Need

Expressing high optimism for the immediate future of residential air conditioning, Mr. Stangle said:

"Every house, now and in the future, will need a planned all-year comfort system, for without it the house will become prematurely obsolete. . . . .

"There has been a general and increasing acceptance on the part of the public for direct fired forced warm air, due in part, we believe, to the fact that the total effect of winter air conditioning can be obtained for less money with this type of equipment than with the relatively more expensive equipment used in the steam-heated type of auxiliary or split air conditioning systems.

"And, too, the concerted effort and wide publicity of the National Warm Air association has undoubtedly had its effect upon the buying public."

Points to Relationship Between Wood, Steel

■ Gaining confidence of customers and pointing out advantages to be gained by improving their properties is a major step in tying in sales of lumber and steel, said E. E. Louis, assistant manager of the merchant products sales division, American Steel & Wire Co., before the Southwestern Lumbermen's association Jan. 29, in Kansas City, Mo.

Mr. Louis pointed out wood and steel are definitely related. He called attention to use of steel in implements and wire ropes in felling and handling the trees, in transporting logs and finished lumber, cited as example the steel nail, used to hold in place practically all lumber sold.

Stressing the relationship of the two as applied to retail merchandising, he emphasized the importance of being neighborly and gaining the confidence and trust of customers.

"In doing this it is important that you make it apparent that the service you are rendering is not of the aloof, disinterested, fly-by-night, money-grabbing variety. Yours is the shoulder-to-shoulder, sincere interest of a real neighbor."

Iron, Steel Export Tonnage Rises

■ EXPORTS of iron and steel products, excluding scrap, in December, totaled 306,647 gross tons, valued at $20,723,541, maintaining the high record of preceding months, according to the metals and minerals division, bureau of foreign and domestic commerce.

This compares with 301,280 tons, valued at $22,871,417, in November, a slight increase in volume but a decrease in value. The lower value is due to smaller shipments in the higher price brackets, principally tin plate.

Principal products shipped were ingots and blooms, 64,236 tons; pig iron, 36,545 tons; tin plate, 31,364; rails, 28,596; steel plates, 25,611; black sheets, 21,128 and steel bars 18,062 tons.

The usual table of exports for December, showing details of iron and steel exports, is not available, but will be presented in STEEL, Feb. 7.

HEAVY GAIN IN 1937 FARM EQUIPMENT EXPORTS

Foreign sales of farm equipment in 1937 were largest since 1930, with a total of $75,366,103, compared with $43,993,215 in 1936, a 63 per cent increase, and with $115,819,479 in 1930, according to the machinery division, department of commerce. Tractors and parts constituted 70 per cent of the 1937 total, valued at $52,893,276, a gain of 84 per cent over 1936. Tillage implements were second at $9,304,598, an increase of 66 per cent over 1936. Harvesting machinery totaled $5,972,790, a gain of 59 per cent over the preceding year. Other types increased 25 per cent, from $4,860,675 in 1936 to $6,080,712 in 1937.

YEAR'S MACHINERY EXPORTS 7 PER CENT UNDER 1929

Industrial machinery exports in 1937 made a record second only to 1929, with a total value of $240,449,734, an increase of 52 per cent over 1936 shipments and only 7 per cent below the $257,050,965 value of 1929 exports, according to the machinery division, department of commerce.

The upward trend through the year culminated in December when foreign shipments were higher than for any other month ever recorded, except for portions of 1926. They were 63 per cent higher than in December, 1936.

Exports increased in all groups in December, compared with December, 1936. Power generating machinery, except electric and automotive, rose 70 per cent over the corresponding month of 1936; construction and conveying machinery 140 per cent; well and pumping machinery 48 per cent; power-driven metalworking 97 per cent; other metalworking 30 per cent; textile and shoe machinery 24 per cent; other industrial machinery 41 per cent.

For the entire year construction and conveying equipment showed the largest gain, 96 per cent, to $22,902,393. Exports of power-driven metalworking machinery in 1937 totaled $59,880,376, a gain of 43 per cent over 1936. Other metalworking machinery totaled $4,423,442, only 5 per cent greater than the 1936 total.

ORIGIN, DESTINATION AND PRICES OF EXPORT SCRAP

Where does iron and steel scrap for export originate and where does it go? This question, so often asked, may now be readily answered, as the figures are a matter of public record.

In December, England was the most important taker of American iron and steel scrap, accounting for a total of 126,641 tons. English consumers paid $2,239,774, approximately $17.50 per ton. The North Atlantic coast provided most tonnage. The breakdown by customs district follows:

Massachusetts, 12,047 tons; Rhode Island, 11,168; New York, 21,989; Philadelphia, 14,740; Maryland, 13,683; Virginia, 5898; Florida, 12,195; Mobile, 5651; Sabine, 13,676; Galveston, 7034 and San Antonio, 8560. As $15.50 and $16.50, respectively, were paid for No. 2 and No. 1 steel on the last large purchase, it is believed that much of the December movement was against old orders, booked at levels several dollars a ton higher.

Poland, not Japan, was the second largest taker in December, with 53,150 tons, valued at $959,429, an average of slightly more than $18 a ton. New York provided more than half at 29,724 tons; Maine, 5908 tons; Philadelphia, 2481; Georgia, 7024; Florida, 4750 and Galveston, 3263.

Italy was third with a total of 42,445 tons, valued at $767,443, an average of around $18. Italy's scrap came from the following points: Massachusetts, 5857 tons; New York, 12,645; Philadelphia, 5105; Virginia, 5953; Georgia, 2856; Florida, 6045; New Orleans, 1005 and Galveston, 2979.

The Netherlands also paid an average of $18 a ton in December, ranking fourth with a total of 32,995 tons valued at $597,745. New York provided 12,378 tons, Massachusetts only 20 tons, Virginia, 7358, North Carolina, 7115, Florida, 2003 and New Orleans 2013.

Canada paid an average of about $16.50 a ton, apparently because about half the tonnage moved across the border from Maine. Of

the total of 21,290 tons, valued at $349,563; Maine provided 10,372 tons; Vermont, 27 tons; Rhode Island, 5900; St. Lawrence, 4; Buffalo, 183; Washington, 547 and Michigan, 4297.

Japan dropped to sixth place in December, with 9336 tons, valued at $187,347, an average of about $20 a ton. Most of the scrap for Japan originated on the West coast, as shown by the following breakdown: Massachusetts, 193 tons; New York, 22; Philadelphia, 31; Maryland, 456; Virginia, 1271, Los Angeles, 1350; San Francisco, 2662; Oregon, 1980; Washington, 1173 and Hawaii, 198.

The average prices are only fairly indicative of the export level in December. Examination of values for individual shipments shows that prices were as high as $21 in the North and $6 to $7 a ton less along the Gulf coast. Scrap sold from South Atlantic and Gulf ports a few weeks ago at differentials of $1 and $1.25, respectively, under northern points.

Can Manufacturers See "Fairly Active" Demand

■ Annual conventions of canners, manufacturers of canning equipment and affiliated and related industries attracted between 10,000 and 15,000 persons to Chicago last week.

Exposition of the Canning Machinery and Supplies association at the Stevens hotel included the most modern equipment for the preparation and packing of food products in metal and glass containers. One innovation was an X-ray type of machine which permits the packer to inspect his product after it has been canned.

Can manufacturers reported demand for various types of juices has resulted in a rapidly growing market for containers. In 1937, more than one billion cans of juices, principally fruit and tomato juices, was consumed. Improved quality of tin plate and developments in can manufacturing are credited with responsibility for the substantial upturn in sales of canned food during recent years.

Fairly active demand for cans is expected by manufacturers this year, though a decrease from the 1937 volume is thought probable.

Hearing Set for April 4 On Canadian Trade Pact

■ The state department announced last week new trade agreement negotiations with Canada. A public hearing will be held April 4. Among articles on which concessions will be considered are ferromanganese, ferrosilicon, "hollow bars," and woven wire cloth.

District Steel Rates

Percentage of Open-Hearth Ingot Capacity Engaged in Leading Districts

	Week ended Jan. 29	Change	Same week 1937	Same week 1936
Pittsburgh ..	30	+ 4	81	39
Chicago	27	— 0.5	78	52
Eastern Pa...	31	None	53	36.5
Youngstown..	27	— 1	77	60
Wheeling	46	— 5	41	78
Cleveland ...	31	+ 5	76	59
Buffalo	18.5	— 4.5	86	32
Birmingham..	60	None	76.5	51
New England	20	None	93	83
Cincinnati ...	40	+ 8	21	75
St. Louis	21	None	80	–
Detroit	52	None	90	80
Average....	33	+ 2.5	76	50

†Not reported.

900 in Engineers' Group Inspect Pittsburgh Mill

■ About 900 engineers and production executives inspected Jones & Laughlin Steel Corp.'s new 96-inch continuous strip mill at Pittsburgh, Jan. 26. The trip was a feature of the regular monthly meeting of the Pittsburgh section, Association of Iron and Steel Engineers.

After dinner a technical session was held in the evening at Hotel William Penn. Professor W. Trinks discussed "Forty Years of Engineering in the Rolling Mill Industry." Nearly 600 members and guests heard Prof. Trinks laud the work of electrical and mechanical engineers making possible the modern rolling mill.

Many problems remain, he said, which when solved will render today's mills inefficient and obsolete. Among the developments yet to come he included direct rolling of molten metals, extrusion of steel bars, and rolling of strip by low cost mills.

"Musical Steelmakers" Now on Mutual Network

■ Wheeling Steel Corp.'s radio program, "Musical Steelmakers", which it sponsored every Sunday since Nov. 8, 1936, over station WWVA, Wheeling, and WPAY, Portsmouth, O., recently was switched to a Mutual Broadcasting Co. hook-up so that all corporation branch employes may hear it.

Employes working in the corporation's mills, factories and offices make up a 16-piece orchestra, a quartet, company bands, and also supply the individual performances. Walter Patterson, former program director for WWVA, relinquished that post to devote all his time to the Wheeling Steel production.

PRODUCTION

■ WITH substantial advance in production at Pittsburgh and Cleveland, slight decline at Chicago and Youngstown and unchanged rates at other points the national steelworks operating rate last week increased 2.5 points to 33 per cent. Prospects for this week indicate a further rise.

Youngstown — Off 1 point to 27 per cent as Republic Steel Corp. and Youngstown Sheet & Tube Co. each dropped one open hearth and Sharon Steel Corp. added one. Active open hearths now number 30 out of 83, but 13 Carnegie-Illinois Steel Corp. furnaces are on short schedule. The outlook this week is for 27 per cent.

Pittsburgh — Increased 4 points to 30 per cent, on additions by one large producer. A higher rate is expected this week.

Wheeling — Down 5 points to 46 per cent, due to lower schedule by one interest. A slight further decrease is expected this week.

Cincinnati — Up 8 points to 40 per cent. Mills are on irregular schedules, to match volume of buying.

Detroit — Unchanged at 52 per cent for the third week. No change is expected during the next two or three weeks.

Cleveland — Advanced 5 points to 31 per cent, Otis Steel Co. lighting two open hearths.

Central eastern seaboard — Steady at 31 per cent.

Buffalo—Loss of two open hearths by Bethlehem Steel Co. caused the rate to decline 4.5 points to 18.5 per cent.

St. Louis — Steady at 21 per cent for the fourth consecutive week. Indications are for no change in the next fortnight.

Chicago — Declined half a point to 27 per cent, due to curtailment by one large interest. Relatively steady schedules are expected for the next few weeks.

New England — No change has been made from the 20 per cent level of production, with the same schedule for this week. Two producers are down entirely.

Birmingham — For the third consecutive week production remains at 60 per cent, with 11 open hearths in service.

■ Modernization of Indianapolis railways has made a relic out of an interesting piece of electrical equipment—the first generator used to furnish electric power for street cars in that city. It was built by Thomson-Houston Co., forerunner of General Electric Co., and installed in 1890. It was in use almost constantly since that date until a few weeks ago when the railways' new shop was completed.

Heavy Steel Tonnages Going Into Tunnels

■ STEEL has made modern transportation possible, but the industry owes much to constant evolution in the methods of moving persons and goods. Railroads gave the steel industry its first great impetus in this country and transportation has had an ever-increasing influence on its development. From the crude iron rails of the post-civil war era to the multiple-motored all-metal airplane of today is a long step in rapid transit, in which steel has played a major part.

In this advancement in transportation, related factors growing out of higher speeds on wheels have been developed, long-span steel bridges, elevated highways and railroads, subways, large-bore vehicular tunnels and steel-reinforced concrete highways. In modern transportation the automobile has had the greatest influence on most of these arteries of travel and still has, notably in congested areas of traffic.

The vehicular tunnel is believed the logical solution to many large city traffic problems. As the subways of New York, Boston and other cities have sounded the death knell for elevated railroads, the tunnel and express elevated highway are expected to be outstanding developments in vehicular traffic demands for safety, greater speed and less congestion on city streets. In New York, at least, tunnel construction will increase greatly in the next few years.

With two such vehicular tubes now under construction, the Queens mid-town and second bore for the Lincoln tunnel, New York has plans for several other such projects. These include a mid-town Manhattan underpass to connect the Queens tunnel, which passes under the East river, with the Lincoln, linking Manhattan with Weehawken, N. J., under the Hudson.

This underpass probably will be started this year, taking an estimated 65,000 tons of steel and cast iron, mainly tunnel rings. The Queens tunnel will take close to 85,000 tons, including approaches and feeder lanes. United States Pipe & Foundry Co. has a contract for 55,230 tons of segments, part of the Queens tube.

The two Lincoln tubes will require 101,400 tons of cast iron and steel in the shell and an estimated 10,000 tons in approaches and feeder lanes. A good part of this tonnage is under contract to Bethlehem Steel Co., Bethlehem, Pa. The south tube of this project has been completed and is in operation. The north tube will be opened late in 1940 or early 1941. Mason & Hanger Co., New York, is cutting the bore. Segments for the south tube were placed direct with the Bethlehem company by the Port of New York Authority, and the contractor awarded the rings for the north lanes to this company.

Oliver Iron & Steel Co., Pittsburgh, furnished approximately 2000 tons of high tensile bolts and nuts for fastening the tunnel rings or segments.

An important detail in tunnel design and construction is ventilation. Fresh air and exhaust fan make its operation possible. Accumulation of fumes from automobile exhausts would soon render the tube dangerous or even fatal to passengers.

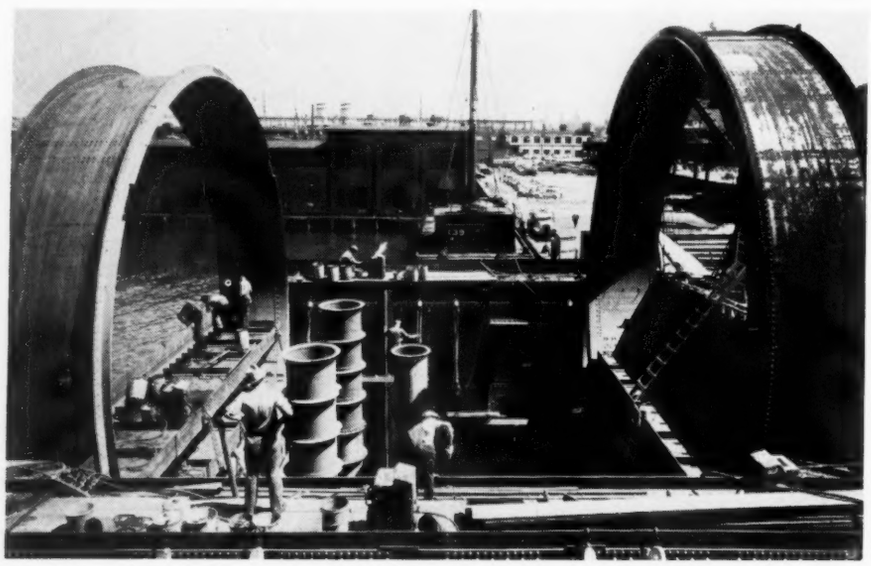
Buffalo Forge Co., Buffalo, has installed 36 fresh air and exhaust fans for the completed Lincoln tube. These fans, constructed almost entirely of steel—sheets, plates, angles and channels, average approximately 10 tons each with wheel diameters from 90 to 97½ inches. There are 16 blades on each side of the wheel, 32 blades per fan. The shaft is of forged steel, operating on 5-inch SKF roller bearings. Blades are die-stamped from light plates and dished at the plant. Fan motors for the completed tube develop 2237 horsepower.

Bids are now being taken by the Port of New York Authority for ventilation fans for the north tube, approximately 20 units.

The ventilation system of each tube is divided into several sections, patterned after that used in the Holland tunnel. The space below the roadway forms the fresh air duct and the space above the tunnel ceiling the exhaust air duct. Three ventilation buildings are provided,

101,400 Tons Steel, Iron in Lincoln Tunnel Shell

Length of south tube, portal to portal	8,215 feet
Length of north tube, portal to portal	7,400 feet
Length of each tube under river	4,600 feet
External diameter of cast iron and cast steel shell, in general	31 feet
Minimum thickness of concrete lining of shell	16 inches
Distance between tubes under river, center to center	75 feet
Width of two-lane roadway, between curbs	21½ feet
Weight of each cast iron shell segment, about	3,100 pounds
Steel and cast iron in shell	101,400 tons
Maximum vehicle capacity, two-tube project, per hour, about	4,000
Number of ventilation buildings	3
Number of fresh air fans for complete project	26
Number of exhaust fans for complete project	30



■ **Erecting steel for lower portion of the New York shaft caisson, north tube, Lincoln tunnel, one of the first operations in boring. The caisson, fabricated by the Federal Shipbuilding & Drydock Co., Kearny, N. J., weighs several hundred tons and was towed by water to the shaft site. Riveted rings are 31 feet in diameter. Entire structure was sunk to the depth of the tunnel mouth from which actual cutting of the tube started**

studies having shown such an arrangement most desirable.

All three buildings are completed as far as required for operation of the south tube. One building is at the base of the Palisades, another just outside the New York bulkhead line at the foot of West Thirty-ninth street, and the third is at the southwest corner of West Thirty-ninth street and Eleventh avenue, New York. Fresh air will be drawn in through louvres in the side walls, the intake fans being arranged on different floor levels adjacent to these openings. Exhaust fans drawing vitiated air from the tunnel are similarly disposed on different floors and arranged to discharge vertically through stacks extending through the roof.

For the Queens-Manhattan tunnel under the East river, 82 fans will be required and the contract has been placed with B. F. Sturtevant Co., Boston, at approximately $285,000.

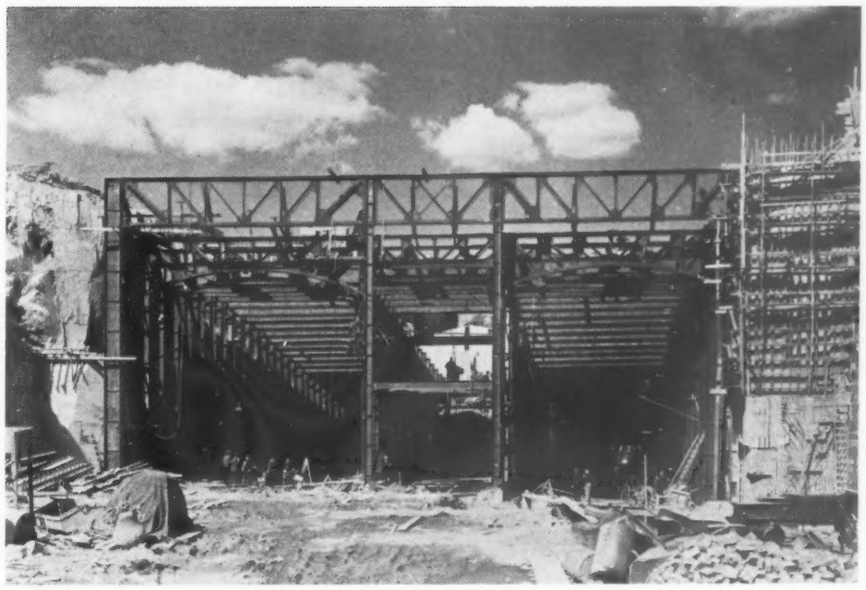
In New York city subways hundreds of fans for ventilation have been installed, but are used only in emergency to clear smoke, dust or fumes which might fill the tunnel from accidents and other outside causes. For a fresh air supply, air shafts with surface gratings, supplemented by train movements are sufficient. Compared with a deep-bored vehicular tunnel, the subway is practically an open cut when the problem of ventilation is considered.

Within a year Manhattan will be practically surrounded by circumferential highways, with the completion of the Harlem river drive connecting with the East river drive. The West Side elevated highway will be part of the circumferential system. Most of this highway will carry express vehicular traffic north and south between upper and lower Manhattan with ramps and lanes for entering and leaving the express arteries. Numerous bridges will be required and the Henry Hudson parkway will also be a link in this comprehensive system. Reclamation of the Harlem river water front is included in the plan.

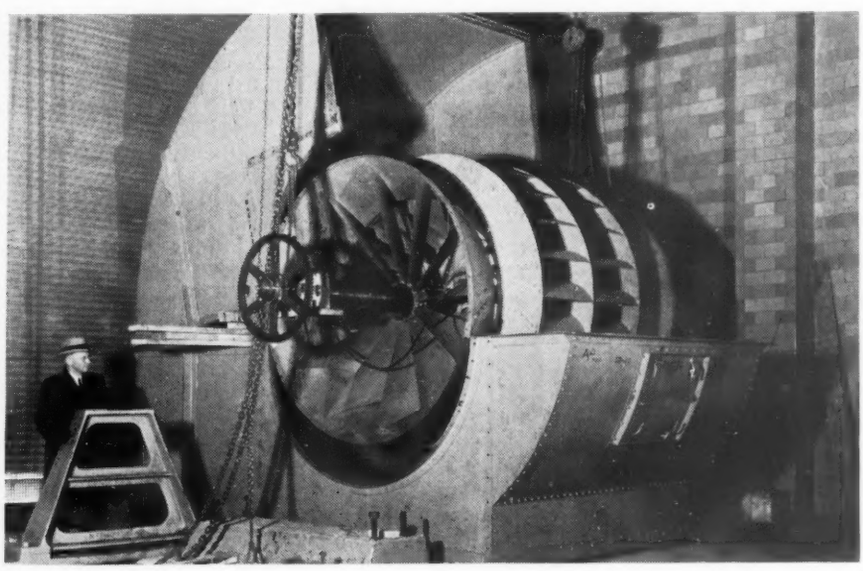
While the success of the still uncompleted West Side elevated highway indicates this plan will go forward toward solving north and south traffic delays and congestion, the cross-town vehicular requirements must be met in other ways. Most traffic engineers favor a series of cross-town tunnels connecting the marginal express systems, with suitably located exits and entrances to such tunnels, taking a good part of cross-town traffic off the surface. The Manhattan by-pass is considered the first of these although its primary object is, of course, to connect the East and North river tunnels.

With the completion of the Sixth avenue subway, now under construction, the famous old Sixth avenue elevated railroad will be dismantled and go to scrap dealers. Other elevated railroad lines, the pride of the gay nineties of old New York, are likely to succumb to the wrecker's torch within a few years. The old elevated railroad coaches, first hauled by puffy little soft coal-burning locomotives distributing showers of cinders, are doomed, yet the "El" a couple of generations ago was the first step in big city rapid transit.

The passing of the elevated railroad naturally brings to mind the future of the elevated vehicular highway. The latter type of traffic artery has a definite place, but not on Broadway and Fifth avenue, New York, or Main street, Averagetown. Paralleling the bustling waterfront along the Hudson on the extreme west side of Manhattan, and providing express traffic for good distances from the Battery to the northern end of the island, the highway has greatly speeded movement between these points. It has taken through traffic off the streets along the water front. Thus far the highway is elevated only to Canal street on the south, but foundations to Cedar street are in and the road will ul-



■ **Completed structural steel framework, New Jersey portal, Lincoln tunnel, as seen from the Weehawken plaza before finishing. The steel bent section may be noted sloping gradually toward the main tunnel. Portal, entrance and bent section spaces were cut out of solid rock**



■ **One of the 56 fans, each weighing approximately 10 tons, which will ventilate the Lincoln tunnel tubes. Buffalo Forge Co., Buffalo, has the contract for 36 supply and exhaust units, most of which have been installed. These fans are constructed almost entirely of steel and are driven by motors developing 2237 horsepower in three ventilation buildings. The north tube will require 20 fans, bids on which are now being taken**

timately extend to the Battery.

Much the same problem prevails along Atlantic avenue, Boston, the waterfront route between the South and North stations. An elevated railroad line now follows a proposed elevated highway route between those points.

Under certain specific conditions, as cited above, the elevated express highway appears to be the answer to many traffic problems, notably, when the need of through traffic express service is evident in highly congested industrial districts. Strong factors operate against elevated highways in residential, certain commercial and retail shopping districts, however, and such projects are not seriously considered for these areas.

Ultimate plans call for extension of the West Side elevated highway to Brooklyn by tunnel under New York harbor, from the Battery via Governors Island. While this may not be started immediately, borings have been made, plans well advanced and the project appears to be a certainty in the future.

Tunnel Construction Increasing

Another tunnel project long discussed and partly blue-printed is a tube connecting Staten Island with Brooklyn or Manhattan. Boring and preliminary work was started on such a Brooklyn-Staten Island tunnel under the Narrows some years ago during the Hylan administration but the work was halted. A tube connecting Staten Island directly with Manhattan, a proposed rapid transit tunnel linked with the major subway systems, would be the longest ever built. Early action on such a tunnel appears unlikely, however, for several reasons, including the great cost and difference of opinion as to location of the tube, under the Narrows or direct to Manhattan, by Staten Island residents, who are practically alone in agitating for such a project.

New York, however, is becoming more and more favorable to tunnel and subway construction and the next two or three years will see a decided increase in such projects, directed toward the solution of automobile traffic problems, and involving several hundred thousand tons of steel and cast iron.

Reader Comments

(Concluded from Page 9)

average gainfully-employed American produces only about 60 cents worth of goods or services per hour, the steel industry's average wage is outrageously unfair to the scattered and unorganized half of the American people. The average wage of the building industry is positively dishonest.

American industry is certainly on the spot. With profits not far from the vanishing point, any drastic reduction in prices without reducing wages would lead to certain disaster.

It's hard to see anything ahead but failure for "Industry's Campaign for 1938" unless it is aimed directly at the recovery of its lost domestic markets. Leaders of industry should go to the microphone and ask the people to demand that industry be permitted to reduce unfair wages without unreasonable restraints.

In a campaign to regain its lost markets, industry would find itself struggling with and for the forgotten working men. In the fall of 1920 union leaders forgot how hard it is to raise the wage of one working man without reducing the pay of another. The Forgotten Man is still forgotten. Politicians and union leaders can apparently forget him and prosper. Industry can't. There are too many forgotten men. Together they make a market industry simply can't do without. . .

The fruits of the toil of both the price-fixer and his brother-in-iniquity, the labor agitator, are just now so sour that they are beginning to turn the stomachs of the American people.

HENRY CLARKE

Acheson-Clarke Co.,
Miners and Metallurgists,
Trussville, Ala.

MEETINGS

MORE SPACE PROVIDED FOR DETROIT TOOL EXHIBITION

■ Demand for space in the Machine and Tool Progress exhibition in Detroit, March 9-12, under sponsorship of American Society of Tool Engineers, has been so great it has been necessary to obtain additional area. The show will be held in Convention hall in connection with the society's first general convention. Over 100 exhibition spaces already have been assigned and new space will be allotted in the order of receipt of applications. Ford R. Lamb, 5928 Second boulevard, Detroit, executive secretary of the society, is show manager.

CLEVELAND TOOL DEALERS PLAN REGIONAL MEETING

First regional meeting of machine tool dealers, distributors and direct sellers in the Cleveland area will be held following a dinner at the Cleveland club, Feb. 8. The group will be addressed by Tell Berna, general manager, National Machine Tool Builders' association, Cleveland; A. G. Bryant, Bryant Machinery & Engineering Co., Chicago, and president, Associated Machine Tool Dealers; and Leroy P. Robinson, sales manager, Werner G. Smith Co., Cleveland. Details are being arranged by G. J. Hawkey, president, Cleveland Duplex Machinery Co. Inc., Cleveland.

During the day the relations committees of the National Machine Tool Builders' association and Associated Machine Tool Dealers will hold a meeting in the office of the former organization.

INDUSTRIAL ADVERTISERS TO MEET IN CLEVELAND

Sixteenth annual convention of the National Industrial Advertisers association will be held in Cleveland Sept. 21-23 according to Stanley A. Knisely, advertising manager, Republic Steel Corp. and vice president of the association, who is in charge of arrangements. F. O. Wyse, advertising manager, Bucyrus-Erie Co., South Milwaukee, Wis., is president.

New chapters have been organized in Toledo, O., Toronto, Ont., and Indianapolis. Monthly meetings of local chapters now are held in 15 cities.

WIRE ASSOCIATION PLANS SECOND REGIONAL MEETING

Gratified by the success of a regional meeting in Pittsburgh last May, the Wire association is arranging a similar one in that city April 1. Dr. S. A. Braley, Mellon Institute of Industrial Research, Pittsburgh, will be one of the speakers; a second speaker will be announced shortly. Pittsburgh Steel Co.'s plant will be open for inspection. A buffet luncheon will be served at the mill.

J. K. Beeson, assistant manager of sales, Pittsburgh Steel, and John Timberlake, wire department, Jones & Laughlin Steel Corp., constitute the local committee in charge.

DATES OF PACKAGING SHOW AND MEETING ANNOUNCED

American Management association announces its eighth packaging exposition and conference at the Palmer House, Chicago, March 22-25. Major divisions which will participate in the conference program are: Packaging machinery, packing and shipping, bulk packaging; and unit packaging. Sessions covering these divisions will be held concurrently. Alvin E. Dodd, 330 West Forty-second street, New York, is president of the association.

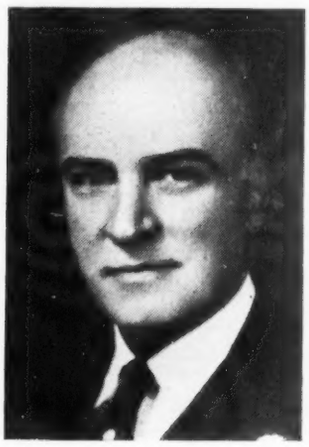
PREPARE FOR CINCINNATI COAL MINING CONVENTION

Rehabilitation of coal mining communities, mechanization and safety work will be considered at the fifteenth annual coal convention and national exposition of American Mining congress in Cincinnati, May 2-6. More than three-fourths of the exhibit space in Music Hall has been reserved by manufacturers of mining machinery, equipment and supplies. Julian D. Conover, 309 Munsey building, Washington, is secretary.

England To Use Lowest of Low-Grade Ore; Italy Reclaiming "Scoria"

■ TWO NEW blast furnaces now being built by Appleby-Frodingham Steel Co. Ltd., at Scunthorpe, Lincolnshire, England, will operate on North Lincolnshire ores which contain less than 25 per cent iron and probably are the leanest ores used commercially for pig iron, according to Wm. A. Haven, vice president, Arthur G. McKee & Co., Cleveland.

According to Mr. Haven, who has just returned from a visit to continental Europe and England, such ores are considerably lower in iron



William A. Haven

content than the Northamptonshire ores used at Corby, where new blast furnaces and basic bessemer plant have received much attention.

The two blast furnaces at Scunthorpe with complete auxiliary equipment and facilities for crushing and sintering are being designed and built under direction of the McKee company. The stacks are 22 x 95 feet, largest in England. Such furnaces would have a rating of about 750 tons daily on Mesabi ores but are not expected to produce more than 500 tons on Lincolnshire ore.

Mr. Haven stated that the method of ore beneficiation to be employed may prove to be a more important development than the changes that will be introduced in the design of the blast furnaces and the auxiliary equipment. Location of the furnaces in the immediate vicinity of the mines and the consequent saving in freight have been chief reasons for the ore being successfully commercialized. However, a difficult problem in mixing and grading the ore to prevent irregularities in furnace operation is encountered. As it comes from the numerous open pits or quarries the ore fluctuates widely as regards chemical analysis. The present practice of sending it directly to furnace bins will be changed and mechanical means provided for storing and reclaiming it in such a manner that fluctuations in chemical analysis will be almost entirely eliminated.

Furthermore, in the new plant, crushing, grading and sintering of fines, which have been proved by Appleby-Frodingham to be highly advantageous, will be carried out on a scale perhaps not previously attempted in blast furnace work in any country. Means will be provided for crushing to any desired extent not only the ore for the new plant, but also for two other large blast furnace plants in the district now operated by the company.

Mr. Haven also studied blast furnace practice in various parts of Italy. One of Italy's sources of iron ore supply is the island of Elba, where Napoleon first was exiled. The ore is transported in boats from Elba to a blast furnace plant in Piombino on the mainland opposite and to other furnaces on the east coast.

Near Piombino, Mr. Haven states, are veritable mountains of "scoria," a material which contains about 50 per cent iron and is a by-product of the iron and steel industry of ancient days. Iron ore brought from Elba was smelted in the ancient forges, only a small percentage of the iron being recovered and the remainder, in the form of slag, discarded. This slag, available in quantity, now is one of Italy's most important sources of iron supply.

A paper describing the new blast furnace plant being built at Scunthorpe, and commenting on iron and steelworks practice abroad will be presented by Mr. Haven at the Eastern States Blast Furnace and Coke Oven association meeting at the University Club, Pittsburgh, Feb. 11.

Mr. Tata's Pittsburgh "Indianized"; Praise for Mr. Keenan, of U.S.A.

■ TO THE "dreaming eastern, and practical western mind" is attributed the growth of Tata Iron & Steel Co. Ltd., Jamshedpur, India. On the retirement of J. L. Keenan, general manager, recently, interesting facts were disclosed. Mr. Keenan had served the company 25 years.

In 1902 Jamshedji Tata, Indian industrialist and founder of the company, met the late Charles Page Perin, noted steelworks engineer, in New York and the idea for a steelworks in India was born. In 1911 the first blast furnace was lighted and in succeeding years Jamshedpur became Tata's "Pittsburgh of India."

Said Mr. Keenan in farewell:

"To me, an American, it is a matter of sincere pleasure to see that the steel industry in India is today as firmly established as elsewhere in the world and that the Jamshedpur steelworks stands out as the largest steel unit in the British Empire, controlled by Indians, manned to a considerable extent by Indians, and managed, as it will be after I go, by Indians.

"During the last 20 years the Jamshedpur works has expanded and developed in dimensions never dreamed of by the original planners. With a huge steel plant in the center has grown a number of allied and subsidiary industries. Twenty-five years ago the ideas of most of us of large scale production of iron and steel hardly computed a 1000-ton blast furnace and 35,000-ton monthly production in the open hearth. We have today realized more than our dreams, for we have to our credit a 97,000-ton production in a four-furnace plant and a

J. L. Keenan

record production in the duplex furnaces of 55,000 tons a month.

"Not many years ago it was taken for granted that such a steel plant in India would never run without the aid of experts from Europe and America. A few years ago I took on myself the responsibility of accelerating the Indianization of the higher posts. Many people were skeptical. It is gratifying that results have justified my action."

Mr. Keenan was presented with a silver model of a blast furnace, and a stadium was named in his honor.

MEN OF INDUSTRY

■ CHARLES R. MOFFATT has been appointed director of advertising, United States Steel Corp. of Delaware, under C. V. McKaig, vice president. He has been advertising manager of Carnegie-Illinois Steel Corp. since that company was organized Oct. 1, 1935, and director of exhibits, United States Steel Corp. since July 1, 1935. Mr. Moffatt has had 31 years of service with subsidiary companies, beginning in 1907 in the accounting department of the Illinois Steel Co. at Chicago. He took charge of sales statistics and advertising for that company in 1919 and remained in that position until his 1935 appointments. The new office, combining advertising and exhibit activities, will be located at 436 Seventh avenue, Pittsburgh.

Charles R. Moffatt

♦

G. C. Smith has been elected president, Sterling Steel Foundry Co., Braddock, Pa. He succeeds his father, the late George W. Smith.

♦

Harry W. Hultgren has been appointed sales manager, Cushman Chuck Co., Hartford, Conn., to succeed G. H. Pratt, retired.

♦

Joseph K. Mitchell has become manager of the Buffalo district office, Harbison-Walker Refractories Co., Pittsburgh, succeeding the late Robert P. Morrow.

♦

Royal M. Bates, heretofore vice president and secretary, Jamestown Metal Corp., Jamestown, N. Y., has been elected president, succeeding the late Oscar E. Anderson.

♦

Charles H. McCrea, identified with the Cleveland works of National Malleable & Steel Castings Co., since January, 1931, as sales manager, has succeeded W. L. Woody as manager. A graduate of Purdue university, 1912, he entered the company's employ at Toledo, O., in 1913. After serving as captain of cavalry, attached to the ninth division of the regular army, he re-entered the employ of the National company in July, 1919, in charge of the St. Louis office.

Charles H. McCrea

♦

George T. Hubbell has been transferred from the home office of Mullite Refractories Co., Shelton, Conn., to Detroit to serve as district representative covering the state of Michigan.

♦

Charles R. Hook, president, American Rolling Mill Co., Middletown, O., has been elected president, National Association of Manufacturers for the 1938 term. He succeeds William B. Warner, president, McCall Corp., who has been elected chairman of the association's board of directors.

♦

Edward F. Callahan, general manager of apparatus sales, International General Electric Co., New York, has been elected a vice president of the company. He has been in the employ of General Electric and International General Electric 33 years, having joined the company's test course after graduation from Yale university.

♦

C. W. Spicer, founder and vice president, Spicer Mfg. Co., Toledo, O., has been elected president, Society of Automotive Engineers. Vice presidents of the society include: E. N. Sawyer, production engineer, Cleveland Tractor Co., Cleveland, and H. E. Simi, chief engineer, Twin Coach Co., Kent, O.

♦

Trusten P. Draper, who joined the Worcester Pressed Steel Co., Worcester, Mass., two months ago as assistant to John W. Higgins, president, has been named general manager and a director of the company. He succeeds John N. Mowery, resigned. Mr. Draper has had more than 30 years' experience in the steel industry. Following graduation from Yale university, 1908, he became associated with Youngstown Sheet & Tube Co., and after nine years joined the former Trumbull Steel Co. as general manager in charge of operations. He then became vice president and a director, Sharon Steel Hoop Co., now Sharon Steel Corp., holding that position more than 12 years.

♦

John G. Shodron, formerly chief research engineer, James Mfg. Co., Fort Atkinson, Wis., and his son, John M. Shodron, heretofore mechanical engineer for Caterpillar Tractor Co., Peoria, Ill., have been appointed to the faculty of the mechanical department of Marquette university, Milwaukee.

♦

W. A. Meiter, associated with the Worthington Pump & Machinery Corp., Harrison, N. J., as a salesman in the Cleveland territory since 1927 has been transferred to the Buffalo sales office as manager. He succeeds C. C. Scott, who will devote his entire time to special work in the Buffalo district.

♦

Henry Jensen, General Electric Co., Lynn, Mass., has been elected president, New England Foundrymen's association. Other officers are: Vice president, Robert H. Nelson, Arcade Malleable Iron Co., Worcester, Mass.; treasurer, Arthur W. Gibby, East Boston, Mass.; secretary, Ernest F. Stockwell, Barbour-Stockwell Co., Cambridge, Mass.

♦

James Boyd, formerly assistant eastern district manager, Westinghouse Electric & Mfg. Co., has been named eastern district manager, succeeding H. F. Boe, who has become commercial manager of the com-

James Boyd

pany, with offices in Pittsburgh. Mr. Boyd's headquarters will be in New York. Mr. Boyd joined the company 21 years ago as service engineer.

♦

Walter J. Stumpf, associated with George L. Mesker & Co., Evansville, Ind., since 1904, has been elected general manager, succeeding Henry F. Koch.

♦

W. B. Baker, for the past three years vice president, Unaweld Mfg. Co. of Texas, a subsidiary of the Una Welding Inc., Cleveland, has been named treasurer and general manager of the parent company.

♦

Dr. J. C. Warner, associate professor of metallurgy at Carnegie Institute of Technology and an authority on physical chemistry, has been appointed professor of chemistry and head of the department of chemistry, effective July 1.

♦

Welles G. Catlin, industrial coordinator of the co-operative training division, International Correspondence schools, Scranton, Pa., since February, 1937, has been appointed assistant director of the I.C.S. mechanical schools.

♦

W. T. Darcy has been placed in charge of renewal parts sales for industrial apparatus, General Electric Co., Schenectady, N. Y., serving as assistant to the manager of the control and renewal parts division, industrial department.

♦

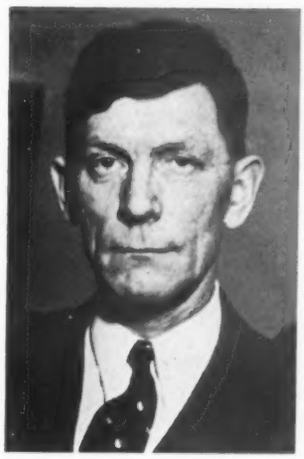
T. W. Drennan, manager, New York branch, Fairbanks, Morse & Co., machinery manufacturer, was awarded the president's cup at the company dinner held at the Belmont-Plaza hotel in New York recently, in recognition of the volume of sales in the past year.

♦

George Kirtley, heretofore assistant to the vice president of Plymouth Locomotive Works, division of Fate-Root-Heath Co., Plymouth, O., has been named sales manager of the locomotive division. Roy J. Johnson, previously assistant chief engineer, has become assistant sales manager.

♦

Howard G. McIlvried has been appointed general superintendent of Irvin works, now under construction for Carnegie-Illinois Steel Corp., near Clairton, Pa. Mr. McIlvried began as a machinist at the Braddock, Pa., works of American Steel & Wire Co. and later was connected successively with the engineering departments of the Wire, National Tube, Carnegie Steel and American Sheet & Tin Plate companies. Upon consolidation of the sheet and tin company with Carnegie-Illinois Mr.



Howard G. McIlvried

McIlvried was appointed assistant manager at Chicago and in February, 1937, was transferred to Pittsburgh as assistant to the manager of operations.

♦

Dr. Gerald M. Cover has been appointed associate professor of metallurgy at Case School of Applied Science, Cleveland. He was graduated from Case in 1924 and was a former member of the faculty. Recently he has been working in the research and operating departments, National Steel Corp., Steubenville, O.

♦

J. L. Perry, president, Carnegie-Illinois Steel Corp., Pittsburgh, will be honored by the Pittsburgh chamber of commerce at a luncheon Feb. 3 in the William Penn hotel. William P. Witherow, president, Blaw-Knox Co., Blawnox, Pa., will be toastmaster.

♦

S. K. Oliver, for some years metallurgist, Delco Products division, General Motors Corp., Dayton, O., has been transferred to the Electro-Motive Corp., La Grange, Ill., another corporation subsidiary. He is in charge of heat treating in the new diesel engine plant now nearing completion. New heat treating equipment being installed will be in operation in about a month.

Frederick T. Robertson

Who has been elected vice president, Lewis Bolt & Nut Co., Minneapolis, as noted in STEEL, Jan. 24, page 24. Mr. Robertson joined the company six years ago

♦

George S. Case, Lamson & Sessions Co.; F. G. Hodell, Hodell Chain Co.; H. M. Lucas, Lucas Machine Tool Co.; W. L. Seelbach, Forest City Foundries Co., and S. D. Wright, Atlas Car Mfg. Co., were elected to the board of governors of the Associated Industries of Cleveland at the annual luncheon meeting at the Statler hotel, Jan. 26. William Frew Long, general manager of the organization, spoke on "Modern Labor Relations."

♦

Mark M. Kindig has been elected president, Burger Iron Co., Akron, O., engineer and fabricator of steel construction. He succeeds the late J. A. Burger. Mr. Kindig has been associated with the company 34 years, and for the past 20 years has served as secretary and general manager.

G. A. Rohner, with the company 38 years, the last 30 as treasurer, has been elected secretary. Other officers include: Vice president, J. A. Rohner; vice president in charge of Dayton division, Carl J. Burger; vice president in charge of engineering and sales, Dayton division, R. E. Bishop.

DIED:

■ WILLARD P. CHANDLER JR., 49, chief engineer, industrial division, Blaw-Knox Co., in Pittsburgh, Jan. 24. Prior to joining Blaw-Knox in 1929 he was identified with the American Heat Economy Bureau Inc. and before that was with the Duquesne and Clairton steelworks of the former Carnegie Steel Co. He was a member, American Iron and Steel institute, Association of Iron and Steel Engineers, and Engineers Society of Western Pennsylvania.

♦

Nathan Bart, 49, president of Apex Steel Supply Co., scrap metal firm, Cleveland, in that city, Jan. 14.

♦

John P. Seyfert, 61, vice president and general superintendent, Atlas Metal Parts Co., Milwaukee, Jan. 20.

♦

S. L. Sewall, 75, vice president and treasurer, Minneapolis Iron Store Co., Minneapolis, in that city, Jan. 7.

♦

Fred H. Skinner, 63, secretary, Michigan Metal Products Co., Jan. 24 at Battle Creek, Mich.

♦

George W. Hughes, 75, for 17 years blast furnace superintendent, Pitts-

burgh Steel Co., Monessen, Pa., Jan. 18.

♦

G. E. Braddock, 39, assistant advertising manager, Caterpillar Tractor Co., Peoria, Ill., in Chicago, recently.

♦

W. S. Rowan, recently foundry superintendent, Auburn Foundry Inc., Auburn, Ind., in that city, Jan. 11.

♦

Fred A. Fisher, 72, president and general manager, Cape Ann Anchor & Forge Co., Gloucester, Mass., Jan. 13 in Boston.

♦

George Denneny, 52, identified with the law department, United States Steel Corp., New York, since 1918, in that city, Jan. 23. He was particularly active in matters for the Isthmian Steamship lines, a subsidiary.

♦

Pike P. Meade, 60, former secretary and treasurer, Symington-Gould Corp., Rochester, N. Y., in Rochester, Jan. 18.

♦

John J. Huebscher, 52, president, Zone-O-Trol Corp., Minneapolis, manufacturer of speed control devices for automobiles and other automotive devices, in that city recently.

♦

Walter F. Schleiter, 64, in Palm Beach, Fla., Jan. 19. He formerly was secretary and vice president, Dilworth, Porter & Co. Ltd., now a part of Republic Steel Corp. Prior to his retirement in 1932 he was president of Verona Tool Works.

♦

Samuel R. Limerick, formerly assistant general superintendent, Baldwin Locomotive Works, in Philadelphia, Jan. 16. He had been identified with the Baldwin company more than 30 years, and more recently had been associated with the Flannery Bolt Co., Pittsburgh.

♦

Samuel Siddall, 72, at his home near Warren, O., Jan. 24. Early in his career he had been affiliated with the Union Iron & Steel Co., Youngstown, O., American Steel Hoop Co., United States Steel Corp., and Garry Iron & Steel Co., Cleveland, becoming treasurer and general manager of the latter firm in 1907. In 1910 he was named vice president, and the Garry company bought the Empire Iron & Steel Co. at Niles, O. When the Brier Hill Steel Co. took over Empire in 1912, Mr. Siddall went to Warren where he was named secretary-treasurer and later vice president, Warren Iron & Steel Co. In 1919 he went with the Philips Custom Body Co. as secretary, but in late years he had been inactive. He was a member, American Iron and Steel institute.

Activities of Steel Users, Makers

■ KOPPERS Co., Pittsburgh, has acquired exclusive rights to manufacture and sell the line of valves and other waterworks and sewage equipment formerly produced by Michigan Valve & Foundry division, Timken-Detroit Axle Co. They will be produced under the present trade name by Koppers' Western Gas division, Fort Wayne, Ind.

♦

Columbia Steel Tank Co., Kansas City, Mo., has opened a new branch office and warehouse in Omaha for distributing steel tanks in Nebraska, Iowa and South Dakota. A. L. Vaughn is in charge.

♦

Fuchs Machinery & Supply Co., Omaha, Nebr., has been appointed distributor for the South Bend Lathe Works, South Bend, Ind., and for the Delta Mfg. Co., Milwaukee, manufacturers of metal and woodworking equipment.

♦

Acme Steel Co., Chicago, has moved its purchasing department from the general offices at 2840 Archer avenue, to the Riverdale works. The department, in charge of H. L. Brueggemann, purchasing agent, will be located in the new million-dollar addition just completed.

♦

Spencer Lens Co., Buffalo, manufacturer of microscopes, microtomes, still projection apparatus and scientific optical equipment, has purchased 25 acres in Cheektowaga, a suburb of Buffalo, and will construct a new factory as part of its expansion program to double its present production schedule and number of employes. Units will be erected gradually.

♦

Pfaudler Co., Rochester, N. Y., has just completed a $2,000,000 expansion program which has doubled the capacity of its Rochester plant. This included erection of factory buildings, modernization of the old plant, installation of several gas burning furnaces, cranes, dust control equipment, welding machinery and other items necessary for larger glass-lined steel tanks.

♦

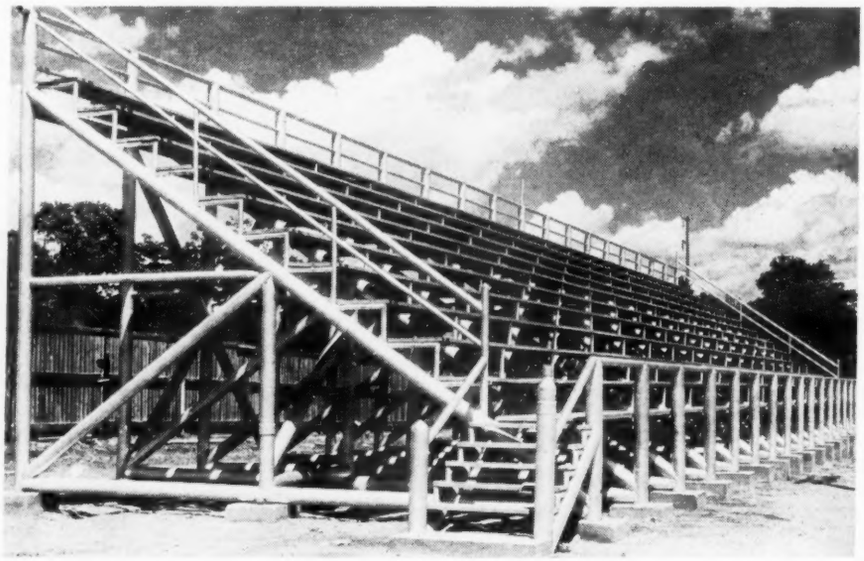
Zeiss industrial measuring instruments are now being distributed by Carl Zeiss Inc., New York. To handle sales and servicing the company announces the appointment of the following district representatives: Sid Langston, 1213 West Third street, Cleveland; C. H. Gosiger Machinery Co., Dayton, O.; Edward W. Voss, 2882 East Liberty avenue, Pittsburgh; Higgins & Linde Inc., 564 West Randolph street, Chicago, and W. A. Kerr, 54 Chilton street, Belmont, Mass.

♦

Standard Electric Stove Co., Toledo, O., has changed its name to Standard Electric Mfg. Corp. Joseph

(*Please turn to Page* 88)

No Money? Build It of Steel, Anyway



■ **Sapulpa, Okla., officials wanted a grandstand for the town's ball park, but lacked funds. A lot of salvaged pipe nearby, and steel's well-known adaptability gave them an idea. The government through WPA provided labor. The pipe, anchored in concrete, and welded together makes a unique and substantial structure. Photo, courtesy WPA**

Costs Bar Price Cuts, Tower, Fairless Inform Senators

■ INCREASED steel prices have not been more than required by increased labor, tax, materials and other costs, two representatives of the industry told the senate committee on unemployment Jan. 22.

B. F. Fairless, president, United States Steel Corp., excused from appearing personally before the committee on account of illness, submitted a statement for the record. "Prices cannot be reduced without a corresponding reduction in costs of which wages is the most important part," he wrote.

Walter S Tower, executive secretary, American Iron and Steel institute, said assertions the advances in steel prices in the past two years have far outrun increased cost of production are untrue.

Costs Paced Steel Increases

"Such assertions are not in accordance with the facts, for in addition to the series of increases in wages which have raised the hourly earnings of steel wage earners to the highest level in the history of the industry, more than 30 per cent over the average of 1929, there have been substantial increases in the cost of raw materials, taxes and other expenses. These higher costs of production have almost entirely offset the revenues accruing from the higher prices for steel."

Mr. Fairless pointed out that earnings of the corporation and subsidiaries for the nine years from 1928 to 1936 gave a return of less than 2½ per cent and, for the 10-year period, including 1937, less than 3 per cent. For 1937 the return is estimated at about 6 per cent.

"It is a well known fact that there are great variations in the operations in the steel industry," he stated. "There are long periods during which operations are at a loss, or at just about at cost, which must be met by other periods of profitable operations if this essential and vital industry shall continue to be self sustaining."

Mr. Fairless' statement briefly reviewed the employment and operating record of the corporation's subsidiaries. Average monthly employment for 1937 was 261,402; peak was in August with 278,178; at the end of the year this had fallen to about 240,000. From late August operations fell from 84.5 per cent of capacity to 23.9 per cent in the last week of the year.

Both Mr. Fairless and Mr. Tower told the committee of the steel industry's policy of spreading the work during slack periods, and stressed the fact employment and payrolls had held up much better than production.

How this tempered the recession for steel wage earners was explained in STEEL, Jan. 10, p. 15.

During the present recession, Mr. Fairless said, corporation subsidiaries have not had unusual requirements for assistance to employes for whom work is not available. During the period from Oct. 1, 1930, to Nov. 30, 1937, the companies extended credit and made direct relief expenditures to their employes aggregating $9,513,003.59, of which $5,395,273.11 has been repaid.

The corporation, Mr. Fairless reminded, authorized expenditures approximating $253,000,000 for plant modernization from 1933 to 1937. At the end of 1937 the unexpended balance for continuance of this program was more than $80,000,000.

"It is hoped that these expenditures can be made in the regular course of completion of the projects. If such be done, about one-half, or $40,000,000, would be expended in the first quarter of 1938 and the other half expended in the second and third quarters of 1938.

May Enlarge Program

"In addition, if business conditions warrant, there will be, undoubtedly, other expenditures in considerable amounts during 1938."

For summary of construction under way Jan. 1, see STEEL, Jan. 3, p. 279.

The steel industry as a whole spent about $650,000,000 for new plants and equipment during the past three years, Mr. Tower testified. In 1937, $290,000,000 was spent; in 1936, $216,000,000; in 1935, about $140,000,000.

Most of this was for construction or improvement of finishing facilities, including a number of continuous mills for producing flat-rolled products.

Moderate improvement in operations during the early months of 1938 was predicted. Said Mr. Tower: "Indications in the trade are for at least a moderate measure of further improvement during the early months of the year."

Said Mr. Fairless: "There is some indication of some present improvement, principally, as I view it now, in the replenishment of stocks of material required by reason of the diminution of inventory stocks—a buying for immediate necessities."

Pointing out that the steel industry prospers when the companies which buy its products prosper, Mr. Fairless stated: "Purchasing by those industries is essential to return to normal employment the men of the steel business."

"The durable goods industry, including the railroads, the construction and the utilities industries, presents a condition in which, if confidence in the general business outlook should occur, there would be a revival of construction and other activity which would be very far reaching and most constructive in its effect."

No falling off in exports of rolled and finished products by the corporation's subsidiaries was reported. Exports in 1936 were about 6 per cent of total shipments; for the first nine months of 1937, about 8 per cent of the total; and for all of 1937 about 9 per cent.

Virtually no pig iron was exported by the subsidiary companies in 1936 and only a relatively small amount in 1937.

Denies Armament Link

"There is no indication of any relation between the subsidiary companies' export business and armament preparations in the European countries and Japan."

Mr. Tower was briefly cross-examined by the committee members. Asked by Senator Murray if the railroads were prohibited from making improvements because of the increased price of steel, he dissented. He expressed the opinion that granting of the railroads' request for a 15 per cent freight rate increase would bring the carriers into the steel market.

Also under cross-examination, Mr. Tower pointed out the increased price of steel was not due entirely to wage increases but also to higher taxes and materials costs. He gave as his opinion that it would be a good thing for the government to do its building in periods of depression and to stay out of the building market in times of prosperity.

Ludlum Steel Co. Adds to Thompson Trophy Prize

■ Winner of the Thompson trophy race who sets a new speed record for that event at the national air races in Cleveland this summer will receive an additional $2000 and a stainless steel plaque, according to an announcement by the Ludlum Steel Co., Watervliet, N. Y., donor of the award.

Last year's $2000 prize was not awarded because no record was broken, and it has been added to this year's award.

Ludlum has been active in developing improved steels for aeronautical and automotive industries.

To Buy or Not To Buy; Factors in Machine Tools

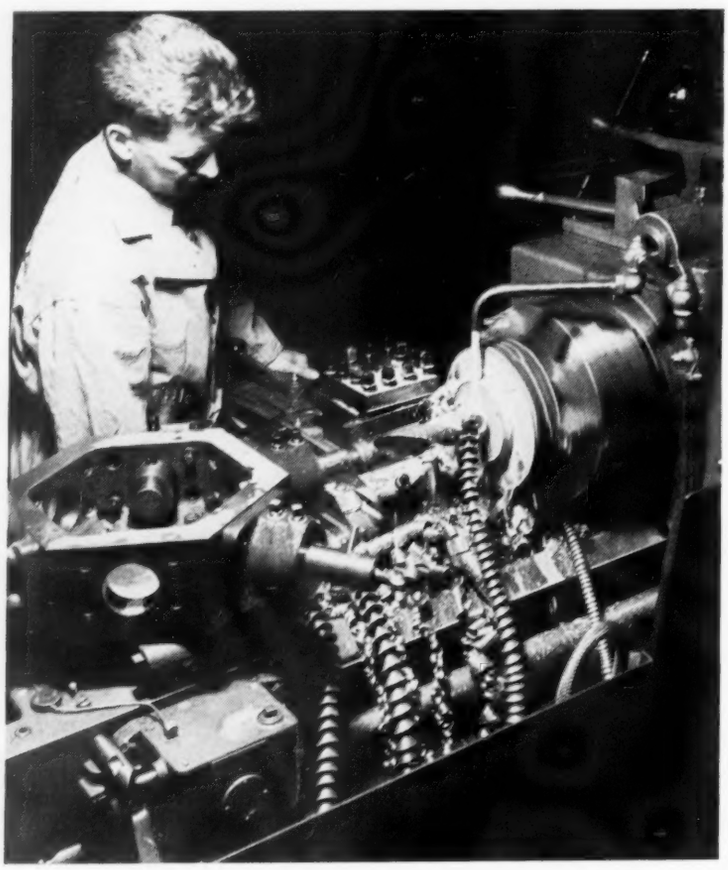
BY CLIFFORD S. STILWELL
Vice President and Sales Manager
The Warner & Swasey Co.

■ I AM engaged in selling machine tools. It is a most interesting and highly specialized job. I do not think there is any other sales problem quite like that faced by machine tool manufacturers. Probably the basic reason for this situation lies in the fact that factors having a bearing upon machine tool purchases lie so largely in the future. Forward thinking and forward planning are basic elements in the whole machine tool picture. Every discussion of machine tool equipment involves looking ahead, looking toward possible future volume of business, thinking in terms of possible future profits.

For that very reason, the volume of machine tool sales in any given period tends to reflect not the potential needs for machine tools but the current state of business men's confidence in the future. There is no question about the need for greater machine tool re-equipment. Everyone knows that most of the machine tools in this country are over ten years old. In practically every plant there are machine tools which management will agree should be replaced.

The question is not whether machine tools should be bought—the question is when. And the time of purchase is influenced much more by business psychology than it is by statistically proved manufacturing requirements.

This situation is very well illustrated at present. In spite of the comparatively large volume of machine tool sales during the last two years, the accumulated obsolescence of the depression period has only to a small extent been corrected.



■ "If volume of manufacturing picked up substantially, it is highly probable that a great deal of present slow-down pyschology would disappear"

Throughout all industry there is a recognized need for further substantial machine tool re-equipment. Businesses are financially able to buy—their resources are not depleted as they were in the middle of the last depression. And yet today many companies who say, without argument, that they need and expect to buy new machine tools, are postponing purchases. They excuse their postponement on various grounds—but the fact is that they hesitate to buy machine tools because machine tool purchases are investments in the future—and the future, at this writing, is an uncertain matter.

Is this attitude toward machine tool purchases a justifiable one? I do not believe that it is. I may be accused of being somewhat prejudiced in my views, because I am naturally interested in pressing sales today instead of seeing sales postponed until tomorrow. But nevertheless, on a basis of practical experience and familiarity with the whole machine tool situation, I am convinced that many manufacturers are defeating their own best interests by delaying needed machine tool purchases at this time. They are defeating their own best interests because they are failing to prepare themselves properly for the various contingencies which the coming year may bring forth.

In this connection, I would like to review some of the reasons currently given by manufacturers for delaying machine tool purchases, and analyze the validity of these reasons.

Hope for Profits Tax Repeal

Some manufacturers say they do not wish to buy now because they hope that later in the year the undistributed surplus profits tax may be repealed. This is an excellent hope—but after all, it is at this writing nothing more than a hope. And if this particular tax is repealed, it will probably mean that some other type of tax will have to be imposed.

We know that whatever form it may happen to take, the tax bill is going to be large. The point is that new machine tools installed today will effect savings in production costs during the course of the year; and that out of such savings may be realized money which will help pay the tax bill at the end of the year. With competition keener than ever, high cost producers are going to be up against serious difficulties. An immediate investment which would reduce production costs would seem, in my opinion, to be one of the very best safeguards which could be taken against the burden of tomorrow's taxes.

Some manufacturers who need

new machine tools badly are deferring purchases today because they say they have not enough business to warrant such purchases. This is an old story, and the result is always the same. Such companies wait until they get a large volume of business before ordering machine tools—and then they are unable to get machine tools on time because by that time the machine tool industry is operating full tilt and deliveries are a month or two behind.

This is exactly what happened during the spring of last year. It is what has happened again and again in the history of the machine tool industry. It would seem that an excellent time to proceed with a re-equipment program would be right now, before the upswing of returning business brings with it its usual burden of fresh problems and complications. Furthermore, the manufacturer who gets his re-equipment program out of the way right now is the one who is going to be able to bid most successfully on returning business the moment it begins to arrive.

Some manufacturers, I believe, have the feeling that during the coming year wages are going to decline, and therefore new machine tool equipment may not represent quite the saving in cost that it would at today's wage levels. In my opinion, such manufacturers are mistaken. It is possible, of course, that wage levels may come down to some extent, but my own belief is that wages will not decline materially, so that cost reducing equipment will be an even more vital element of competition than it has been in the past. Instead of waiting for wages to come down, the safer course is to assume that wages will probably remain fairly high, and prepare for anticipated price declines by the immediate installation of cost reducing equipment.

Fear Slow-down

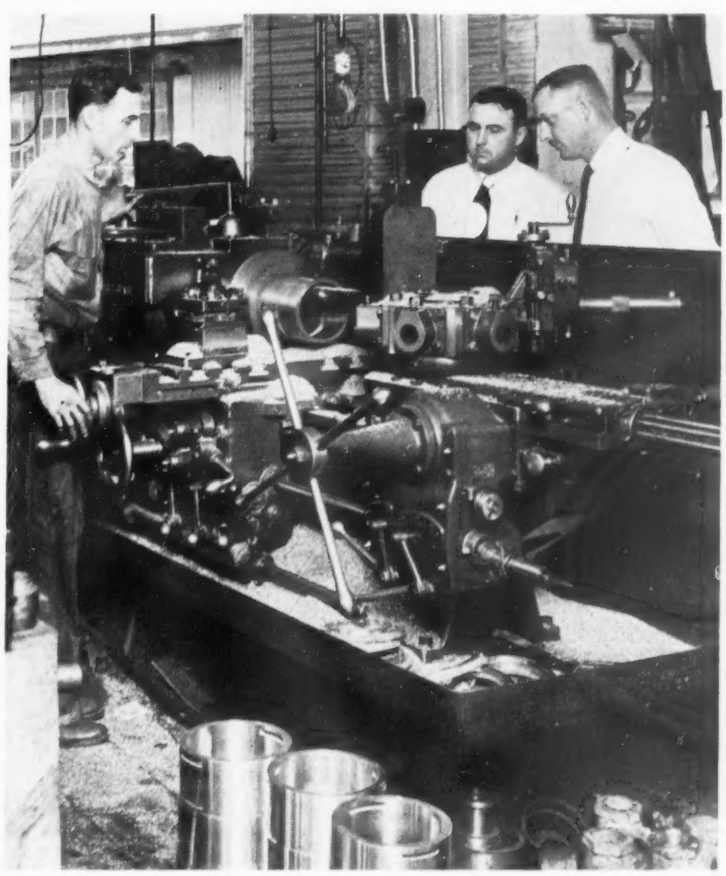
Some manufacturers who need new machine tools hesitate to buy today because they say that their workmen will not produce any more on new and more efficient machines than they now produce on the old machines. This, in my opinion, is the one objection which, at the moment, may carry some weight. The "slow-down" is an extremely serious difficulty today; but I am convinced that this situation is, to a large extent, temporary—at least in its more aggravated form.

The point is that the slow-down is really a spread-the-work movement. It is an effort to make work take more hours, so that more men will be kept at work, or the men who are kept at work will get more money in their pay envelopes than they would on a shortened work-day or work-week. The slow-down is, therefore, to a large extent a product of a period of declining volume of business.

If volume of manufacturing picked up substantially, it is highly probable that a great deal of the present slow-down psychology would disappear. When men now on payrolls are assured of a full week's work and new men are also added to payrolls, the reason for trying to spread the work out over more hours will largely disappear.

When that time comes—and in my opinion it may come sooner than most of us expected—the advantages of highly efficient machine tool equipment will again become highly important. It would seem to me that today is an excellent time in which to make machine tool replacements—even in the face of slow-down psychology—in order that when business does return in large volume, there will be on hand equipment which will enable a company to get maximum profit potentialities out of that larger volume of business.

However, I did talk the other day to a man who expressed a real reason for not buying new machine tools. He said: "This country is on the verge of a revolution, the government is going bankrupt, the whole nation is going bankrupt, civilization will be destroyed, and we will sink back once more into the dark ages." If you agree with him, don't buy any machine tools.



■ High-speed production of bronze bushings for use in oil-field equipment, at Oil City Brass Works, Beaumont, Tex.

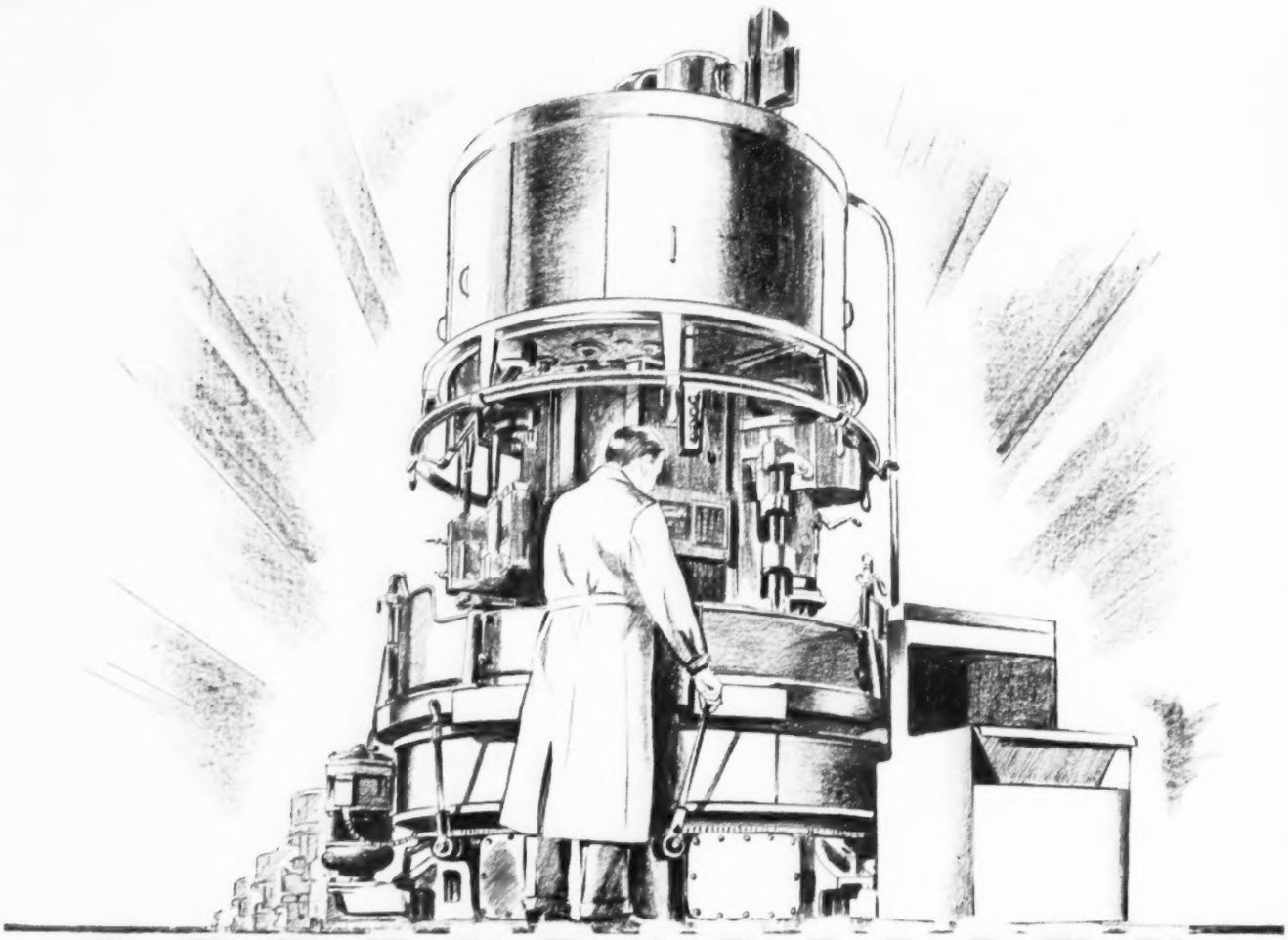
Increases Sales Force To Combat Recession

■ In an effort to combat the business recession, Manning, Maxwell & Moore Inc., Bridgeport, Conn., manufacturer of valves, gages, and control instruments, announces a 25 per cent increase in its sales force beginning Feb. 1.

Nine new general salesmen will complete factory training at the end of this month and be assigned territories. This increase will permit smaller territories and more complete coverage.

Seventy cents of every dollar's worth of goods sold last year were for products not manufactured by the company in 1931.

■ Dr. Edward R. Weidlein, director, Mellon institute, Pittsburgh, has announced establishment of an industrial fellowship by Westinghouse Electric & Mfg. Co. for the study of problems in dielectrics and electrical insulation. Dr. Robert N. Wenzel, member of the institute research staff since 1927, has been appointed fellow in charge of this project.



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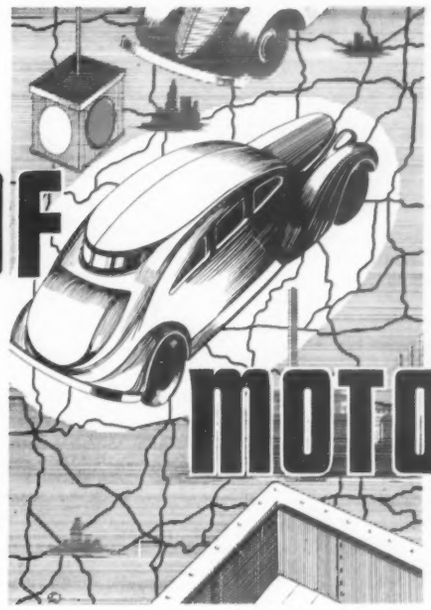
MIRRORS OF MOTORDOM



BY A. H. ALLEN
Detroit Editor, STEEL

DETROIT

■ JUST a January thaw in business—so W. J. Cameron of the Ford Motor Co. characterizes the present easiness in automobile assemblies and other lines of industry. Everyone fervently hopes he has diagnosed the ailment correctly, but as yet there are no signs that the thaw is freezing up, despite last week's zero weather.

This week will see still further paring of assembly schedules, as all Chrysler divisions closed last Friday until Feb. 8. General Motors divisions likewise have trimmed output, Buick, for example, operating only three 7-hour days last week. Everywhere assembly schedules are being close-coupled to sales reports and it is difficult to forecast from week to week just what the trend is going to be. In general, it appears February output will continue restricted, and upward movement in March is hoped for, but by no means is a certainty.

February Output Restricted

Total automobile output for January will approximate 250,000 units and February assemblies likely will fall somewhat below this figure. It appears now the first quarter of the year will account for about three-quarters of a million cars.

Hardest hit sections of the country are middle-western industrial areas. Car sales are fair in the South and on the West Coast, not quite so good in the East, and poor in the Midwest. It is also interesting to note Canadian sales show no particular "recession" effect, and assemblies in the Dominion have not been reduced appreciably from their normal level. Many Canadian divisions are working on full 5-day schedules, with no prospects of curtailment.

Weather conditions must be taken into consideration in explaining the weakness of sales in the Midwest. Large numbers of prospective car buyers in this area prefer to defer purchases until snow and ice abate and the streets are free from corrosive sand and salt mixtures.

More and more pressure is being applied to the moving of used cars which, in the final analysis, account for the choked condition of the automobile market. National radio programs sponsored by auto builders are working in "plugs" for used cars, and dealers in large cities are banding together in the more effective use of newspaper space in classified sections where used car buys are listed. If some means could be found for removing the million-odd "junkers" from the roads, the jam in used cars might be lessened appreciably. Suggestions for eliminating these unsafe "junkers" are ranging all the way from an outright government subsidy to buy them up, to stringent legislative action to condemn their operation.

■ ASSEMBLY schedules for Ford are holding steady at about 4000 daily. Manufacturing operations are based on supplying 1000 engines and subassemblies daily, with the balance of 3000 coming from the bank of subassemblies

Checks Smoothness of Metal Surfaces

■ **Use of the profilometer by this operator in the Chrysler plant, Detroit, gives a magnified tracing of the smoothness of metal surfaces, provides a check on efficiency of grind and lapping and polishing processes. An extremely fine diamond point is run over the surface and the contours are recorded by means of a cathode ray oscillograph. Profile of a steel surface is shown below, enlarged 100 times horizontally and 10,000 times vertically**

in storage which one month ago totaled some 360,000 units. Thus, on the present basis, the parts bank is sufficient for 120 days of production, which would carry operations well past the midyear mark.

Die programs for 1939 model programs continue to be held in abeyance, and equipment interests are showing some concern over the delay. If new models are to be ready for showing in September, die work should be getting under way now, but it is possible that new models this year may be deferred until December. In any event, equipment suppliers are in much better position this year than last so far as deliveries are concerned. Machinery builders are getting fairly well caught up on backlogs in view of the practical standstill of domestic business for the last two months.

Three series of Nash models for 1939 are about to be turned over to tool and die makers for estimates and it is understood Nash will spend close to $2,000 000 on its program for next year. Nash engineers also have developed designs for a low-price small car which can be sprung any time company executives see fit to do so. The car is reported to be in the $400 price class, but nothing is being done with it at the moment.

Barring the incidence of unfavorable service reports, the new type of stamped steel clutch spring developed this year for Chevrolet probably will be extended to Pontiac models next year. The diaphragm member is in the form of a disk with 18 flexible fingers replacing the former individual coil springs.

■ BUICK'S new metallurgical control laboratories in Flint are close to the last word in layout and equipment for a production laboratory of this type. Facilities for all types of physical and chemical testing, as well as furnace research and design, and related phases of metal studies have been provided on an elaborate scale. A staff of about 100 works under R. B. Schenck, chief metallurgist, their efforts being devoted to correcting difficulties which arise in metal working and treating in the plant, and to determining more efficient methods for future use. One phase of the laboratory's work at present is a study of the practical possibilities of a combination nitriding and carburizing furnace.

Buick is using an interesting setup for the production of flywheel ring gears. Such gears are formed by taking a length of bar stock, about 1-inch by ¾-inch in cross section, running it through rolls which form four complete circular loops in the piece. These loops are then cut apart by a saw, leaving four unclosed rings about 14 inches in diameter. These are joined by butt welding, the pieces are then annealed, the inside and outside diameters turned and the teeth cut. In machining the outside diameter and cutting the teeth, the rings are stacked vertically, about a dozen to a fixture, and then clamped, permitting tools to machine the surface and cut teeth in the complete stack at one time. After chamfering the teeth on one side, the gears are ready for hardening and subsequent attachment to the flywheel.

Automobile Production

Passenger Cars and Trucks—United States and Canada

By Department of Commerce

	1935	1936	1937
Jan.	300,335	377,244	399,634
Feb.	350,346	300,810	383,698
March	447,894	438,943	519,177
April	477,059	527,625	553,415
May	381,809	480,518	540,357
June	372,085	469,368	521,139
July	345,297	451,206	456,909
Aug.	245,075	275,934	405,064
Sept.	92,728	139,820	175,620
Oct.	280,316	230,049	337,979
Nov.	408,550	405,799	376,637
Dec.	418,317	518,958	346,886
Year	4,119,811	4,616,274	5,016,565

Estimated by *Ward's Automotive Reports*

Week ended	
Jan. 1	49,550
Jan. 8	54,084
Jan. 15	65,735
Jan. 22	65,418
Jan. 29	59,365

	Week ended Jan. 29	Jan. 22
General Motors	21,475	21,920
Chrysler	5,950	11,800
Ford	22,765	22,765
All others	9,175	8,933

■ AMERICAN automobile builders have read with interest the news reports from Germany announcing the latest decree of Chancellor Hitler for the formation of a new automobile plant near Freinewalde, to produce 400,000 cars annually. The proposed vehicle will be known as a "volkswagen" or "people's automobile," and will sell for about $350, compared with $560 for the General Motors-controlled Opel, lowest priced car now on the German market. The "volkswagen" will have a 2-cylinder motor mounted over the rear axle, providing maximum speed of 50 miles per hour.

Apparently the Reichsfuehrer envisions himself as the Henry Ford of Germany and is setting out to revolutionize, among other things, the German automobile industry. In this bold step he stands to gain plenty of prestige, and to lose nothing beyond a few millions of the people's much needed tax money.

Control of American export traffic in automobiles will be more concentrated in New York as a result of the interstate commerce commission's recent granting of an increase in freight rates from $1.06 to $1.59 per 100 pounds on freight from Detroit to New Orleans, with no corresponding increase in the rate of $1.23 per 100 from Detroit to New York. The decision also will benefit northern carriers to some extent.

■ FOUR of the country's leading race drivers are out on individual 10,000-mile test runs with the new Hudson 112 in widely scattered parts of the country. Complete data on gas and oil consumption, together with a mass of other performance statistics, will be forwarded to the company here for sales material and other usage.

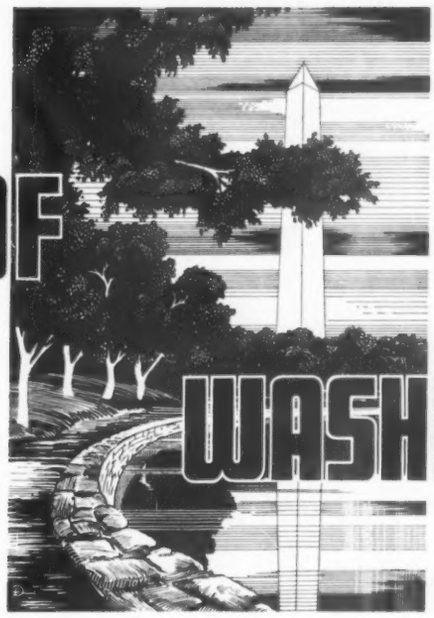
General Motors reports 1937 was the best year in its history for the safety of plant employes. Working more than 384,000,000 man-hours during the year, employes met with only 5.15 lost-time accidents for every million hours worked. Severity of accidents was reduced to 0.652-day lost for every thousand hours worked. Eighty-one plants in this country and Canada are included in the tabulation. The figure for all industry, as reported by the National Safety council, is 13.57 accidents per million hours.

Life of piston rings has nearly doubled in the past five years, according to a survey of service managers made by Bohn Aluminum & Brass Corp. Reasons for greater longevity: Reduced piston clearance due to better expansion control; better rings; harder and more accurate cylinder bores; and structural improvements in pistons.

One of the largest single orders for Stran-Steel building framing has been received by this division of Great Lakes Steel Corp. here, for use in the Oak Grove apartments in Dallas, Tex. The apartments will comprise eight separate buildings, each two stories high, and each containing three and four-room suites for eight families.

Parts assembly operations began last week on the Graham-Bradley tractor and completed units were coming from the rearranged assembly line at the end of the week. Sears-Roebuck is taking delivery of 2000 of the tractors, and 500 additional will be built for export. Plans call for assembling at the rate of 25 per day. Inroads on working capital which have been necessitated by material and parts for the tractor have necessitated arrangement for additional funds by Graham. Automobile assemblies were suspended by Graham last week after 400 had been turned out in three days the week previous.

WINDOWS OF WASHINGTON



BY L. M. LAMM

Washington Editor, STEEL

WASHINGTON

■ ALMOST on the eve of negotiations scheduled between United States Steel Corp. and the Steel Workers Organizing committee last week President Roosevelt found it convenient to be interviewed on the subject of wage reductions, and to declare his opposition to them.

There is an age-old rule binding newsmen not to quote the President direct on subjects discussed at press conferences. But a few days prior to last week's conference a newsman propounded a question to one of the secretariats—the question to be answered by the President.

The question: "Do you agree with Mr. Fairless that steel prices cannot be reduced without cutting wages?"

This was shortly after B. F. Fairless, president, United States Steel Corp., and W. S. Tower, executive secretary, American Iron and Steel institute, made their statements to the senate committee investigating unemployment. (See p. 27.)

It was a few hours after John L. Lewis told the miners' convention that if wages are cut "something will happen."

Adamant on Wage Cuts

When the press conference rolled 'round the President had an answer for "the boys." They were not only permitted to quote the President direct, but the answer was written out for them.

"I have said so frequently—and I do not know how to say more clearly and unequivocably than I have already said—that I am opposed to wage reduction," he said.

"I am opposed to wage reductions because the markets of American industry depend on the purchasing power of our working population. And if we want to restore prosperity we must increase, not decrease, that purchasing power."

"Now as to prices."

"A mass-production industry depends on volume for profits. No mass-production industry can expect to make a profit when volume is small. The steel industry cannot make a profit at 30 per cent capacity, but it can at 50 per cent or 55 per cent of capacity. The only way to get volume up is to produce goods for a price the public will pay. A mass-production industry in its own interest should ask for its products what the people can afford to pay.

"But that does not mean that such price reductions can come out of wages. Those who believe in the profit system must recognize that those who get the profits when business is good must bear the losses when business temporarily is slack. Those who get the profits when industry gets the volume are the ones to bear the risk of such price reductions as may be necessary to stimulate and restore volume. . .

"If industries reduce wages this winter and spring, they will be deliberately encouraging the withholding of buying—they will be fostering a downward spiral and they will make it necessary for their government to consider other means of creating purchasing power."

SURVEY SHOWS BETTER BUSINESS IS FORESEEN

A special survey showing two-thirds of the manufacturers contacted expect a definite upturn in business this year has been submitted to the special senate committee on unemployment by C. M. Chester, chairman, National Association of Manufacturers.

He had sent a questionnaire to 40 major manufacturing concerns and 16 additional representative food companies. With two-thirds expecting improvement, opinion is about equally divided whether it will come in the first or latter half. The survey included a wide range of industries. About 11 per cent decrease in employment from September, 1937, was shown but nearly all companies had shortened hours and spread work before considering layoffs. Average hours dropped from 38 6 to 32.5 per week, a decrease of 16 per cent.

The report discussed the various policies adopted in spreading work or laying off men. Seniority was considered by all employers when layoffs were undertaken.

SMALL BUSINESS ASKED TO TELL ITS PROBLEMS

The small business man will have his innings in Washington this week. Secretary of Commerce Roper, at the request of the President, is calling small business men to meet here Feb. 2 to make some recommendations to the White House.

It is anticipated that 500 or more smaller units of business will be represented at the conference.

In this connection Mr. Roper is sending the following invitation:

"The President has directed me to call a conference of executives of smaller businesses of the nation, representing different industries and locations as completely as possible. After a full discussin of various problems, a committee will be selected to represent the group and to submit suggestions directly to the President."

REVENUE BILL SHAPED BY HOUSE COMMITTEE

There is every indication that the new house revenue bill will be ready for introduction in the house possibly sometime this week. In fact, Chairman Doughton of the ways and means committee, which is charged with writing this bill, is of the opinion that it should be available to the

house shortly after the first of February.

The hearings have been completed after 10 days, and while some interesting suggestions have been made there is a definite feeling that the committee will not seriously revise the recommendations made by the subcommittee. The subcommittee spent several weeks on its recommendations, working in close conjunction with experts of the treasury department. While there is considerable difference of opinion on some of the points it is generally felt that the bill as presented to the house will be like the recommendations of the subcommittee. There is an indication, however, that when the bill goes to the senate finance committee there will be considerable revising.

ADVISORY COUNCIL GAINS BETTER PUBLIC STANDING

Members of Secretary Roper's business advisory council are gratified at the publicity obtained during the recent conference with the President. Members of this council, certainly from a publicity standpoint, have had an uphill fight, back to the days when Senator Berry had his so-called industrial board.

The outcome of the recent conference with the President cannot yet be even guessed, but the most that can be hoped is that if any coordinating business committee is set up by the President three or four members of the business advisory council probably will be put on such an informal board.

It must be recalled that the Roper body is entirely nonpartisan and some members are now and long have been out of sympathy with the President and his policies.

While none of the members of the council would express themselves for quotation, it is known that several are skeptical of any definite results which can be obtained from the President's conferences with business leaders. However, it is a fact some leading members are hopeful.

WOULD KILL PROFITS TAX

"The undistributed profits tax is inherently wrong, and in its operation creates a legislative depression," Representative Celler, New York, said last week in discussing the proposed revision of the revenue act. On the question of the profits tax he said: "It should be ripped out, root and branch."

Celler stated that the report of the subcommittee of the house ways and means committee, retaining and endorsing the principle of the undistributed profits tax, is a fatal error in judgment.

In discussing the tax bill further, Celler said: "At best the only relief to business is that instead of six lashes it gives them four. This tax penalizes thrift, ability, savings and business progress. It discourages and handicaps accumulation of surplus, which is recognized as a necessity in prudent business management. No provision is made for credit against the tax; for debt service, purchase of new machinery, or plant expansion. Thus, its operation creates unemployment. It gives inadequate relief to all those in the afflicted brackets."

PROTEST HIGHER FREIGHT RATE ON IRON ORE

Protest was made last week to the interstate commerce commission by several steel companies against increases in the rate on iron ore in connection with the 15 per cent freight rate increase case.

The companies admitted that the rail carriers have a need for more revenue but they contended that iron ore is already bearing more than its fair share of freight rates. The companies which filed objections included Weirton Steel Co., Pittsburgh Steel Co., American Rolling Mill Co. and the Vulcan Detinning Co.

In connection with this case final argument was due to commence Jan. 31 and Feb. 9 has been set for filing briefs. It is considered that the argument will only take a few days.

SEVEN-POINT PROGRAM TO END RECESSION

Seven specific recommendations to congress for building confidence, increasing employment and restoring recovery were made last week by William J. Kelly, president, Machinery and Allied Products institute, Chicago. These were:

Repeal of the undistributed earnings surtax.

Amend capital gains tax, at least to extent of permitting an offsetting credit for capital losses, and allowing capital losses of prior years to be carried over to offset capital gains of subsequent years.

Amend national labor relations act to insure fair and equitable determination of facts by the labor board and the courts under judicial procedures which are consistent with recognized principles of equity and justice.

Prevail upon the securities exchange commission and related governmental agencies immediately to encourage and not repress a broad, free market for securities of business, realizing new enterprise cannot be fostered in the face of restricted and depressed securities market.

Amend the banking act to permit commercial banks to participate in the underwriting of those classes of securities they are legally entitled to own.

Study carefully the securities act of 1933 and the securities exchange act of 1934 to correct those provisions which are so unduly burdensome and punitive as to discourage normal development of new enterprises and the movement of the normal and essential volume of new capital into the securities of corporate enterprise.

Make clear to the country that national economic planning is not now and will not become an accepted policy of the federal government; that freedom of competitive enterprise will be preserved subject to necessary but equitable regulation in the public interest; and that such projects for the domination of business by government as the proposed federal control of wages and hours will not be undertaken.

MEXICAN IMPORT DUTIES ON STEEL ANNOUNCED

In connection with the greatly increased import duties into Mexico the department of commerce has received word from the American commercial attache at Mexico City that new duties on iron and steel products are as follows: Barbed wire of iron or steel, for fencing, 0.10 peso per gross kilo; cable of iron or steel, 0.30 peso per gross kilo; tin plate in sheets, unpainted, not stamped nor pressed, 0.15 peso per gross kilo; iron or steel in plain sheets, not galvanized, up to 3.4 millimeters in thickness, 0.07 peso per gross kilo; the same, more than 3.4 millimeters in thickness, 0.12 peso per gross kilo.

Tubes and pipes of iron or steel, up to 7 centimeters interior diameter, not specified, 0.12 peso per gross kilo; the same, of more than 14 centimeters interior diameter, 0.06 peso per gross kilo; unions of iron or steel for pipes up to 7 centimeters interior diameter, 0.12 peso per gross kilo; the same, of more than 14 centimeters interior diameter, 0.06 peso per gross kilo; tubes and pipes of iron or steel of more than 7 and up to 14 centimeters interior diameter, not specified, 0.08 peso per gross kilo; unions of iron or steel for pipes, of more than 7 and up to 14 centimeters interior diameter, 0.08 peso per gross kilo; drums of iron or steel, 0.15 peso per gross kilo; cylinders of iron or steel for containers, 0.15 peso per gross kilo.

BARS, DRILL STEEL ADDED TO BRITISH TRADE PACT

The state department last week made public an added list of commodities on which it will consider granting concessions to the United Kingdom under the proposed trade agreement.

Among those added commodities are hollow bars and hollow drill steel carried under paragraph 304 of the tariff act of 1930. The state department has also added machine tools and parts thereof to the commodities already announced by the department. Machine tools are carried under paragraph 372 of the act.

Cure of Business Ills Will Come Eventually But Industry Can Act To Hasten its Arrival

■ OF INTEREST to industry in general is the most recent phase of the administration's attitude toward business and industrial leaders. This is the phase of "co-operation," in which these men are invited to the White House, to advise as to what is necessary to end the existing depression.

Co-operation between industrial leaders and the government is highly desirable and it is to be hoped that there will be more of it, and that it will be more effective in the future. But let no one make a mistake in assuming that industrial leaders will be permitted a real share in shaping governmental policies under the present administration. It is more likely, in the event that business fails to improve markedly, the belief will be fostered that industrial leaders had their opportunity and failed.

Revolt Against Administration Attitude Already Under Way

This administration is not minded to take advice from industrial and business leaders. Nor is it minded to do any backtracking in the New Deal. At a time when the stifling effects of our tax and many other laws are definitely known, the President's utterances are concerned chiefly with holding companies, wages and hours, farm aid and a revival of NRA in some form.

In times like the present it is a source of consolation to read a book like *Woodward's New American History.* The present situation, one is reminded, is not nearly as bad as a number of situations in which this nation has found itself in times past. On each occasion the malady in due time was cured and the nation returned to sanity and to the path of progress. Courageous minority leaders eventually stirred up storms of popular indignation which forced demagogs and false prophets from political power.

That there will be a return to sanity on the present occasion cannot be doubted. It already is under way. Increasing rebellion against the New Deal in congress and the increasing extent to which newspaper editors and columnists are baring many of the New Deal's fallacies show the trend is developing. It is only a matter of time when the majority of voters again will distinguish the sound from the unsound. It is only at the polls that our present national troubles, like those of the past, can be corrected. This is the objective toward which industry should direct its effort.

How can industrial leaders hasten the return to sanity? They must get actively into politics. Industry is scattered about in thousands of communities large and small. All have local governments and the voters take part in county, state and national elections. As the voters in the individual communities feel, so in general does the nation feel.

Political Angle Important in Creating Favorable Sentiment

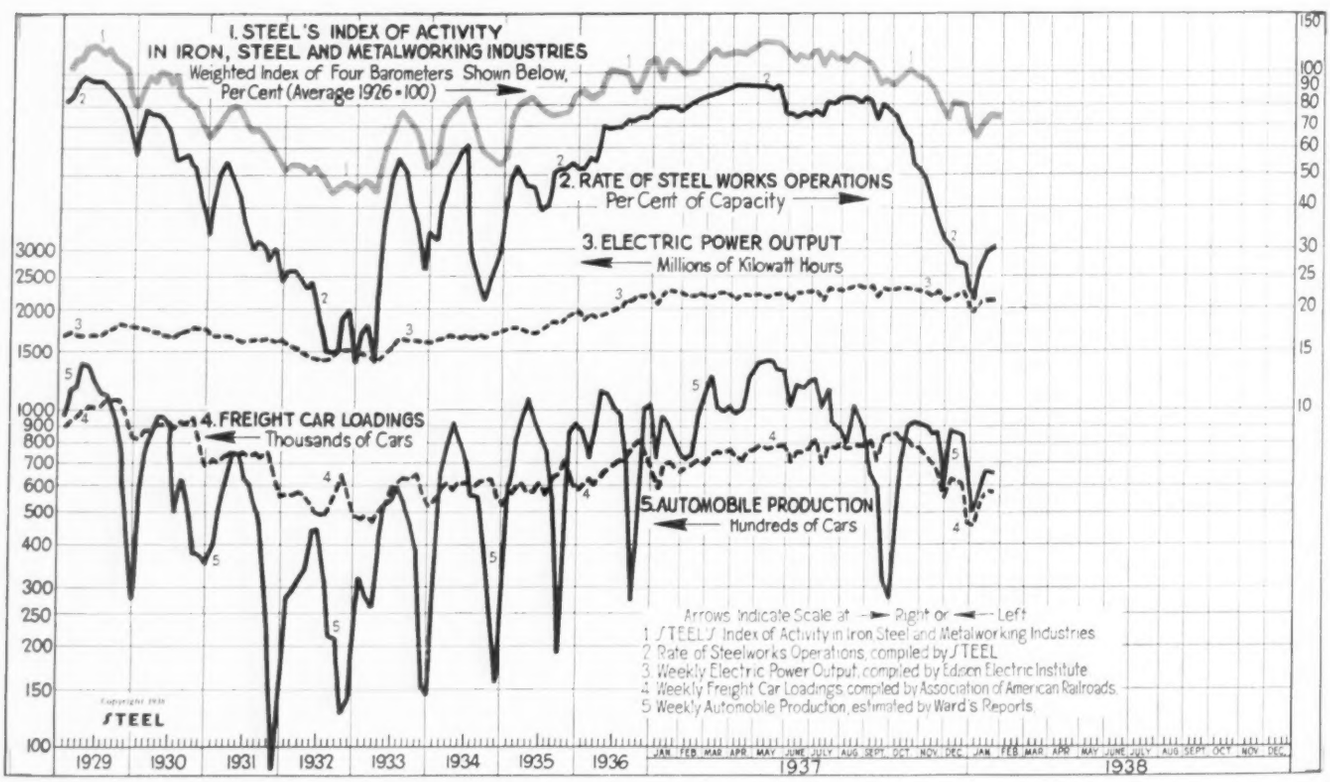
Industries pay heavy taxes. Their payrolls are fundamental in supporting family and community life in all phases. Dollars paid out in wages at industrial plants enable local merchants to stay in business. They make schools, theaters, churches and other institutions possible. They flow on out to the farmer. This is the story that industry should tell, in simple, straightforward words, in the town halls, the newspapers and on the street.

THE BUSINESS

Chills to Confidence Slow Pace of Recovery

■ IN RETROSPECT, the first month of 1938 has been disappointing from the standpoint of business improvement. Following the holiday interruptions of the year-end, industrial activity increased moderately. A fortnight ago business sentiment was buoyed by a few signs of fresh buying and by a hope that the efforts of business men and government officials to get together on a more amicable relationship would at least provide a favorable psychological effect.

At the close of January it is apparent that every step in progress toward recovery has been painfully slow. Automobile output, after some improvement

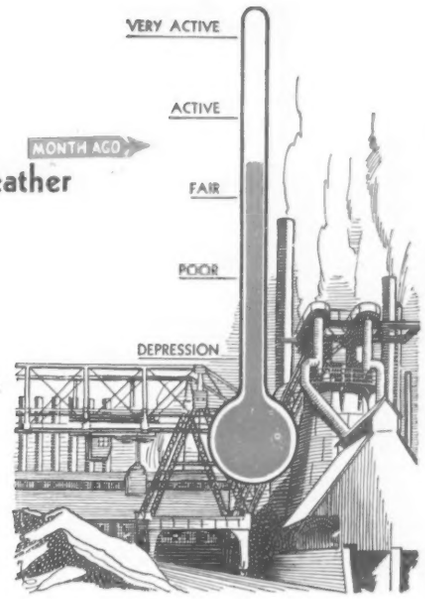

1. STEEL'S INDEX OF ACTIVITY
IN IRON, STEEL AND METALWORKING INDUSTRIES
Weighted Index of Four Barometers Shown Below,
Per Cent (Average 1926 • 100)
2. RATE OF STEEL WORKS OPERATIONS
Per Cent of Capacity
3. ELECTRIC POWER OUTPUT
Millions of Kilowatt Hours
4. FREIGHT CAR LOADINGS
Thousands of Cars
5. AUTOMOBILE PRODUCTION
Hundreds of Cars
Arrows Indicate Scale at → Right or ← Left
1. STEEL'S Index of Activity in Iron Steel and Metalworking Industries
2. Rate of Steelworks Operations, compiled by STEEL
3. Weekly Electric Power Output, compiled by Edison Electric Institute
4. Weekly Freight Car Loadings, compiled by Association of American Railroads
5. Weekly Automobile Production, estimated by Ward's Reports
STEEL
1929
1930
1931
1932
1933
1934
1935
1936
1937
1938

STEEL'S index of activity gained 0.5 points to 74.9 in the week ending Jan. 22:

Week ending	STEEL'S Index of Activity Index No. 1937	1936	Steelworks Operating Rate Per Cent 1937	1936	Electric Power Output Million KWH 1937	1936	Freight Car Loadings 1937	1936	Weekly Auto Output 1937	1936
Oct. 23	97.5	97.1	53.0	73.0	2,281	2,166	773,353	815,972	91,905	59,740
Oct. 30	95.7	99.1	51.0	73.0	2,254	2,175	771,655	814,175	90,155	66,985
Nov. 6	92.3	102.1	47.0	73.0	2,202	2,169	732,145	759,318	89,770	84,305
Nov. 13	86.5	107.9	39.0	74.0	2,176	2,169	689,614	784,672	85,325	104,248
Nov. 20	84.9	109.9	35.0	74.5	2,224	2,196	647,251	790,500	85,757	110,160
Nov. 27	72.7	105.2	31.5	75.5	2,065	2,133	558,627	679,984	58,955	104,283
Dec. 4	81.5	108.4	30.5	76.5	2,152	2,243	623,337	744,957	86,173	100,395
Dec. 11	80.5	113.9	27.0	77.5	2,196	2,278	622,131	738,747	85,765	119,455
Dec. 18	79.4	114.8	27.0	79.5	2,202	2,274	603,292	729,696	82,025	121,038
Dec. 25	69.5	93.3	23.0	68.0	2,085	2,080	460,367	562,218	67,230	79,019
	1938	**1937**	**1938**	**1937**	**1938**	**1937**	**1938**	**1937**	**1938**	**1937**
Jan. 1	62.7	96.6	21.0	79.0	1,998	2,069	457,359	587,953	49,550	71,800
Jan. 8	70.1	107.8	26.0	79.5	2,139	2,244	552,314	698,529	54,084	96,780
Jan. 15	74.4†	106.7	29.0	79.0	2,115	2,264	580,600†	700,238	65,735	91,685
Jan. 22	74.9*	104.0	30.5	80.0	2,108	2,256	579,787*	670,376	65,418	81,395

*Preliminary. †Revised.

STREND



Industrial Weather

TREND: *Sluggish*

a few weeks ago, has remained almost stationary for two weeks. Freight car loadings are barely holding their own. Electric power output, following one substantial gain, has been easing off slightly. The rate of steelworks activity has mounted slowly and is dragging at slightly above 30 per cent.

Where Business Stands

Monthly Averages, 1936=100

	Dec., 1937	Nov., 1937	Dec., 1936
Steel Ingot Output	**37.7**	**57.3**	**113.3**
Pig Iron Output	**57.9**	**79.8**	**120.3**
Freight Movement	**79.8**	**94.7**	**100.05**
Building Construction	**84.1**	**85.9**	**98.5**
Automobile Production	**87.0**	**93.6**	**134.9**
Wholesale Prices	**96.8**	**102.5**	**106.9**

Reflecting this mild improvement, STEEL's index of activity has climbed laboriously from 70.1 at the end of the first full week of January to 74.9 for the week ended Jan. 22. It still remains below the level established in December before the holiday interruptions occurred.

Confidence, which was definitely on the mend a short time ago, has been chilled somewhat by a series of unfortunate developments. One is the tendency of congress to fool around with inconsequential trifles while ignoring constructive measures. Another is the disposition of the administration to swing from one extreme view to another without defining a definite policy. This has tended to put the stamp of insincerity upon its avowed desire to effect constructive teamwork between government and business.

February probably will witness a break in the present state of uncertainty and confusion. Important decisions on prices, wages, rates, and other vital matters of policy are due in the second month. Some of them are bound to be favorable.

The Barometer of Business

Industrial Indicators

	Dec., 1937	Nov., 1937	Dec., 1936
Pig iron output (daily average, tons)	48,499	66,925	100,813
Machine tool index	140.8	163.5	180.4
Finished steel shipments	489,070	587,241	1,067,365
Ingot output (daily average, tons)	56,625	86,151	170,448
Dodge building awards in 37 states (sq. ft.)	28,718,400	29,336,900	33,632,600
Automobile output	*336,275	376,637	519,132
Coal output (tons)	36,226,000	36,255,000	45,756,000
Business failures; number	932	786	692
Business failures, liabilities	$13,291,000	$10,078,000	$12,288,000
Cement production (bbls.)		9,248,000	8,971,000
Cotton consumption (bales)	433,000	485,000	692,921
Car loadings (week av.)	553,297	656,909	693,905

*Preliminary.

Foreign Trade

	Dec., 1937	Nov., 1937	Dec., 1936
Exports		$314,682,000	$229,739,000
Imports		$223,226,000	$224,321,000
Gold exports	$15,052,000	$30,084	$99,000
Gold imports	$33,033,000	$52,194,000	$57,070,000

Financial Indicators

	Dec., 1937	Nov., 1937	Dec., 1936
25 Industrial stocks	$154.52	$156.78	$231.61
25 Rail stocks	$23.70	$24.52	$41.92
40 Bonds	$74.70	$76.41	$90.19
Bank clearings (000 omitted)		$21,796,000	$31,153,000
Commercial paper rate (New York, per cent)	1	1	¾
*Commercial loans (000 omitted)	$9,387,000	$9,479,000	$9,189,000
Federal Reserve ratio (per cent)	80.0	80.0	80.2
Railroad earnings	†$32,440,920	$60,747,445	$72,376,522
Stock sales, New York stock exchange	28,417,970	29,264,906	48,605,047
Bond sales, par value	$198,194,025	$172,175,525	$355,062,700

*Leading member banks Federal Reserve System.
†November, October and November, respectively.

Commodity Prices

	Dec., 1937	Nov., 1937	Dec., 1936
STEEL's composite average of 25 iron and steel prices	$38.88	$38.96	$38.15
Bradstreet's index	$9.77	$10.35	$10.79
Wheat, cash (bushel)	$1.09	$1.05	$1.49
Corn, cash (bushel)	$0.72	$0.70	$1.22

Steel Houses

Most important problem in design of prefabricated houses is that of condensation and "damp walls". Research work has brought solutions of this and other problems encountered in production of such houses

By RICHARD BINKOWSKI

Business manager, House Division, Harnischfeger Corp., Milwaukee

■ PRODUCTION of prefabricated 1-family houses utilizing various types of steel-frame construction has been going through the experimental stage for a number of years. Realizing the future possibilities of such buildings, provided they could be designed and fabricated at low cost, Harnischfeger Corp., Milwaukee, began to investigate manufacturing and sales possibilities about three years ago.

The natural desire of every family to own its home offers a potential annual market of thousands of single-family houses. Any decrease in cost increases the actual market by placing a house within reach of families within lower income brackets. Low cost is thus most essential.

Economical construction of prefabricated houses requires the coordination of architects, builders and men experienced in factory production methods. In our case a research laboratory, under the direction of an experienced technician, was added.

Builders of wood, brick and stone construction have accumulated a store of knowledge of design and fabrication methods by studying the houses after erection. Design of a prefabricated house, however, must be correct from the beginning, because a manufacturer with a heavy investment in manufacturing plant and equipment cannot afford to make a mistake. Also, it is not practical to build a house and wait several years to see how it stands up under exposure to the weather and seasonal changes.

The most important problem in house design is the action of the exterior wall to differences in temperature and humidity on outside and inside exposures. Condensation and "damp walls" have been a problem in practically all types of construction. The research laboratory, therefore, had to determine the suitability of different types of construction under various and changing conditions and, by accelerated tests, within a reasonable time.

Numerous tests conducted in our laboratory have given us complete data on condensation, its effect and penetration, as well as means and methods of preventing condensation where it will interfere or cause trouble. This research as well as other tests on the transfer of heat through various wall constructions have been a most essential step in designing a suitable wall structure.

Test Surface Treatments

Other tests have established the ability of different materials with various surface treatments to stand up under exposure to weather and also within the wall. How to prevent the growth of rot-producing molds or fungi, or to obtain materials not affected, has been another problem.

The research laboratory has proved invaluable in preventing many mistakes in construction and design. Every type of material, finish and method of construction used in the Harnischfeger Pre-Fab house has been tested under conditions more severe than it will be exposed to while in use. Penetration of condensation and transfer of heat or cold are controlled by the use of three thicknesses of insulating board with two insulating air spaces and

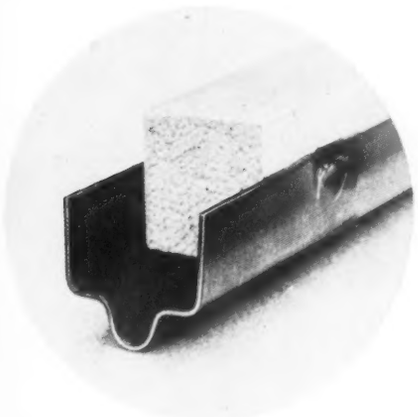
Fabrication is flexible so many designs can be made from the same standardized units. These four each have two or three bedrooms and full basement

no metal parts extending through the wall.

Wall section consists of a ½-inch insulating structural board exposed to the outside with a ½-inch air space between it and the second ½-inch structural insulating board which is fastened to the studs by hardened thread-cutting screws. The outside surface board and furring strips to provide the spacing are fastened to the second board by exploding rivets, which do not go entirely through, preventing conductivity.

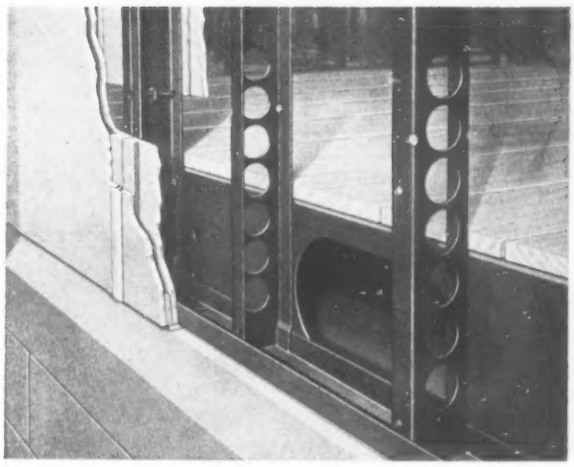
Inside wall consists of gypsum insulating board mounted with wooden furring strips between it and the steel studs to break conductivity. Furring strips are fastened to the steel studs by hardened thread-cutting screws and gypsum board to the furring strips by exploding rivets.

Outside surface and edges receive a priming coat, a second coat of aluminum paint for a seal and a third coat of lead and oil at the factory. A fourth finish coat is applied after all erection and construction work is completed. A coat of lead and oil with asbestos fiber filler in a choice of colors is recommended for this finishing coat. Unexposed surfaces of all boards received only a light protective coating. All insulating boards and battens are coated and where necessary are treated against termites and fungi.



Wooden nailer blocks are crimped in steel struts with corrugated stiffener for rigidity. Struts are welded in frames for attaching sub-floors and ceiling

In this wall construction, humid air from the inside passes through gypsum wallboard, the dead air space, the second insulating board and condenses on the inside of the cold, exterior surface board in the dead air space next to the exterior. Small "weep holes" at the top and bottom of this dead air space in the panel permit this condensate to be carried out by slow air motion.



Cutaway view of panel construction showing assembly and mounting on foundation wall. Three insulating boards and two dead air spaces are used in wall sections

Special wooden strips, hot paraffined to protect from moisture, are inserted at the top and bottom of the panels to separate the two exterior insulating boards. This patented construction covering this combination of insulating boards and dead air spaces is an important feature of Pre-Fab houses.

A house requires from 4 to 6½ tons of steel for the framework, depending upon size and type of roof. Complete panels for a house, as shipped, weigh from 30,000 to 50,000 pounds, a carload. Framework is made from 15-gage, hot rolled, copper bearing steel. All trim is 20-gage, cold rolled, copper bearing steel as it must be capable of finishing.

Steel is received in sheets, slitted into strips and passed through the various processing operations on conveyors. The different parts of the panel frame meet at the welding jigs. The welded frame goes through cleaning, spray coating and drying operations on a conveyor. Coating applied consists of a zinc chromate body in a bakelite vehicle and forms a permanent, dark red, rust resisting, protective layer. Steel frames are removed from this conveyor and stacked conveniently near the end of an assembly conveyor.

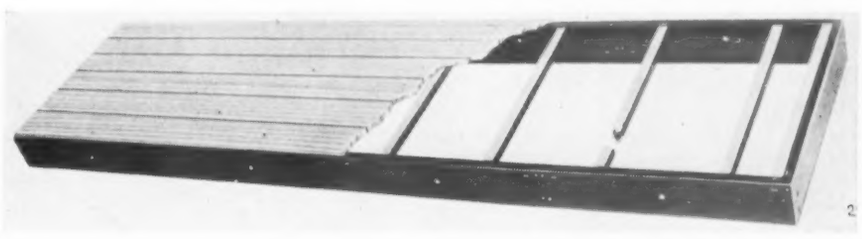
Meanwhile wooden strips, insulating boards and other material for the side walls have progressed through cutting, painting and drying operations on conveyor lines and arrived at this same assembly conveyor. Panels are assembled progressively along this continuous conveyor at the rate of 50 to 60 per hour. Finished panels are wrapped in manila paper and go to storage or direct to cars for shipment. Door, window, half-panels and other special panels are assembled also on this conveyor which is operated intermittently instead of continuously. All assembled panels are stored on end.

Require Few Bolts

Wall, partition, floor and ceiling sections are built on a 40-inch modulus, or width, with steel studs on 13 1/3-inch centers. Wall sections are built on a 3-inch steel channel, roof or ceiling sections on a 5-inch channel and floor sections on an 8-inch channel. Finished outside wall panels are 5¾ inches thick. All panel sections and roof trusses are wedged-keyed together so that very few bolts are required in the assembly.

Outside joints are covered by a special steel trim or batten with baked enamel finish which is painted along with the final finish coat applied after erection. These battens hook and wedge into special hooks welded to the frame. Mastic cement assures an airtight joint. The inside joint is finished with a gypsum plaster cement which is smoothed down and taped over to permit painting or other surface finishing. Bathrooms and kitchens receive a waterproof finish.

Houses are constructed for wood-



Standard 8-inch channel steel floor section with live load capacity of 50 pounds per square foot. Section uses struts shown above

Erection of finished panel as delivered on the job. House is completely enclosed at end of erection

en floors. The rough subflooring is nailed on to the steel frame, at the factory. Special U-shaped channel pieces with a corrugated stiffener are welded into the floor and ceiling frames. Wooden nailing strips are crimped into these channels. Ceiling panels for 2-story houses are built on 8-inch channels and provided with nailing strips for ceiling and second floor. Single-story houses have nailing strips for ceiling only and the channel space is filled after erection with insulating material.

Special steel-protected corner sections, constructed to provide similar dead air spaces, are used at the corners instead of blocking one against the other. Choice is given of flat or sloping roof, supported by factory-built steel trusses keyed to the frame. Roof panel sections with the structural board insulating sheathing nailed in position are keyed to these trusses. Any type of roofing may be applied.

Wooden frames are used on front and rear doors and metal frames and trim on interior doors. Bronze sash and frames are used on windows. Doors and windows, complete with hardware, are fitted at the factory during prefabrication so that when erected the building is enclosed except for finishing the roof.

Attractive lighting and plumbing fixtures and steel cabinets for the kitchen are standard. For 1-floor houses without basement a compact, automatic, oil burning, air conditioning heater is used. The utility room for the heater also contains laundry facilities. For buildings with basements coal, oil or gas burning heaters may be used. All heating is thermostatically controlled and provides washed, humidified air under forced circulation, thus giving winter air conditioning. Also air may be circulated during the summer for cooling.

Prefabricated houses may be assembled by local labor, usually by carpenters, in from two to four days depending on size and type of roof. The house is then enclosed from the weather so that finishing can go ahead at once without waiting for "drying out," as is necessary with other types of construction. This shortens the construction period.

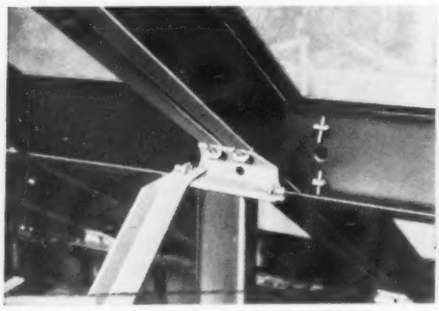
Heating and cold air return ducts are built into the walls. Wiring for electricity and plumbing can be more economically installed in the prefabricated house but underwriters and building codes and labor restrictions prevent this. Switch and outlet boxes, however, are welded to steel studs.

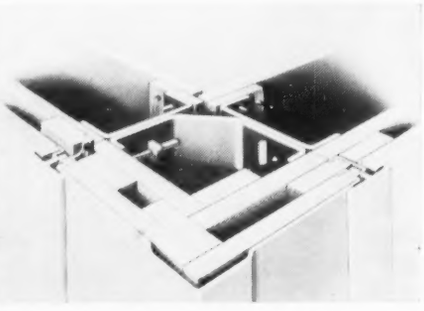
If some of the limitations now incorporated in building codes, which were established for other types of construction, were modified to meet the greater strength and other features of modern steel construction the cost of prefabricated houses could be lowered still further. This would permit construction of houses for families in a lower salary range and greatly extend the possibilities of home owning.

Pre-Fab houses are being marketed through realtors and contractors as they are closer to the home buying public than any other classes of business. These houses have been approved by the Federal housing administration for financing. A number of houses have been erected and are in use. At the present time an entire subdivision with over 100 houses is being laid out in Milwaukee with prefabricated houses designed and arranged to prevent the continual duplication in appearance commonly found in connection with subdivision developments. Architects have provided a choice of 36 exterior designs and 48 interior arrangements.

One of the greatest drawbacks to the wider use of prefabricated houses is the general tendency of builders to let someone else try them out. Naturally the real market for such houses is in connection with real estate and industrial developments where buildings can be made and sold in quantity.

At right, sealed and insulated steel corner construction. At left, detail of keying system employed to lock uprights, struts and roof trusses to form rigid, wind resisting construction





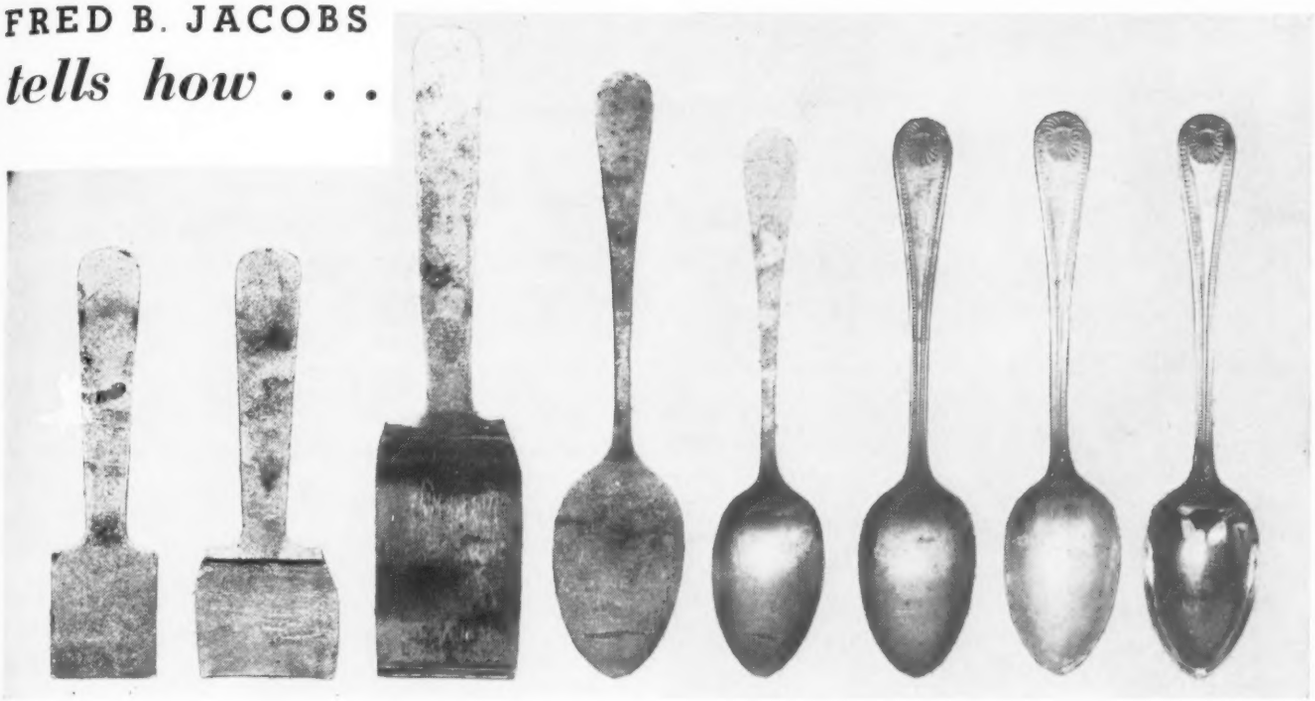
German Text Codifies Magnesium Alloy Data

■ *Magnesium Alloys* (Magnesium-Legierungen), by A. Gruetzner; paper, 192 pages, 6¾ x 10 inches; published by Verlag Chemie, Berlin, Germany, and available through STEEL, Cleveland, and in Europe by Penton Publishing Co. Ltd., 416-17 Caxton House, Westminster, London.

This volume, which is written in German, presents detailed information on patents relating to magnesium alloys from 1909 to December, 1936, inclusive, which are recorded in the German, English, French, Austrian, Swiss and United States patent offices. In the compilation of the patents Dr. Gruetzner was aided by G. Apel and C. Goetze of the German patent office, and the volume itself constitutes a section of *Gmelin's Handbuch der Anerganischen Chemie*, various sections of which have been reviewed from time to time.

Data presented in the book are arranged in three columns, of which the first gives the composition, the second properties, applications and claims, and the third the name of the patentee and patent number. Listing of the various alloys is alphabetical according to the element or elements added to magnesium, beginning with silver (Ag), and ending with zinc (Zn). While written in German, little difficulty should be encountered in determining the correct meaning of the brief, concise remarks, even by those with just a passing acquaintance with the language.

FRED B. JACOBS
tells how . . .



A blank is rolled lengthened cut out raised formed tinned finished, as

Highly Specialized Machinery Produces Tinned Steel Spoons

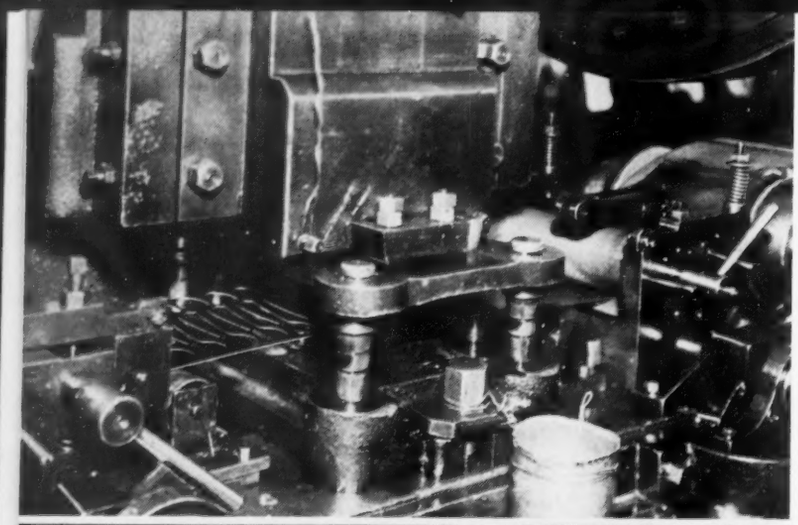
■ MANUFACTURE of tinned steel spoons, sold in large quantities in the five-and-ten cent and dollar stores, is an interesting branch of metal forming work. Highly specialized equipment is used and automatic operations predominate along the production lines. Low manufacturing costs are a necessity because the products are sold for a few cents apiece in the face of keen competition.

Tin has a high value and is approved generally as a coating for the protection of metals coming in contact with foods. Examples are the extensive use of tin plate in the making of containers for the canned goods industry and for the coating of inexpensive tableware.

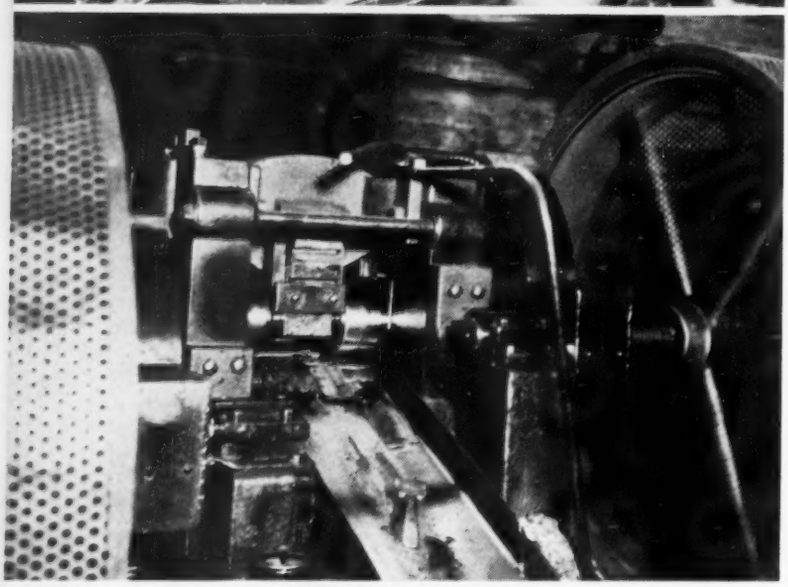
One of the largest manufacturers of tinned steel tableware is Wallace Bros., Wallingford, Conn. This company, in addition to the spoons being made on the following pages, also manufactures tinned forks and knives. Plant capacity for tinned tableware is 216,000 pieces a day. Incidentally, most of the special equipment necessary was designed and built right in the company's own plant and is highly efficient.

Raw material is received in the shape of low-carbon, hot-rolled steel in coils of 150 pounds each. Stock for teaspoons is 0.083-inch thick and 4 9/16-inch thick. A thickness of 0.095-inch and a width of 7⅝-inch is used for tablespoons. For some large items, such as basting spoons, stock comes in flat sheets 14 feet long, 1 foot wide, and 0.168-inch thick. A few other odd sizes are used, and in some instances cold-rolled steel is employed.

The majority of the stock, however, is hot-rolled, and the initial manufacturing operation consists of pickling to remove mill scale. This is done in the usual manner by dipping the stock in a sulphuric acid solution. Then follow a number of operations, results of which are depicted above. From left to right these operations consist of blanking, cross-rolling, lengthwise rolling or grading, cutting out, raising of the bowl, forming of the handle, preliminary tinning, and finish tinning. Pictorial details are shown on following pages.

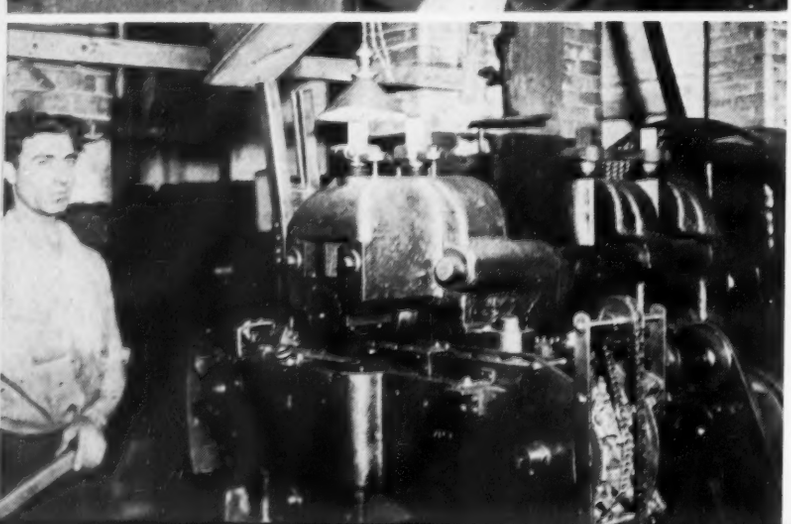


■ Blanking from cold-rolled strip is performed on this machine. Here the sheet stock is fed automatically by a roll feed under a series of two punches and dies arranged to use the stock economically—note that large and small ends of the blanks alternate. As scrap emerges from left side of machine, a guillotine shear cuts it up to facilitate bailing. A pillar die is used on the press to preserve correct punch-and-die alignment at all times

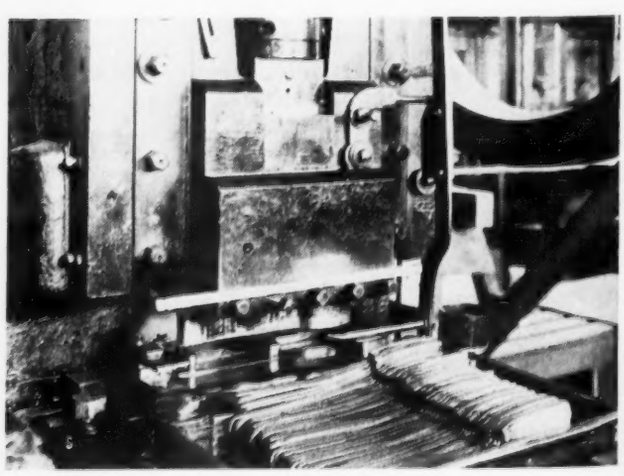


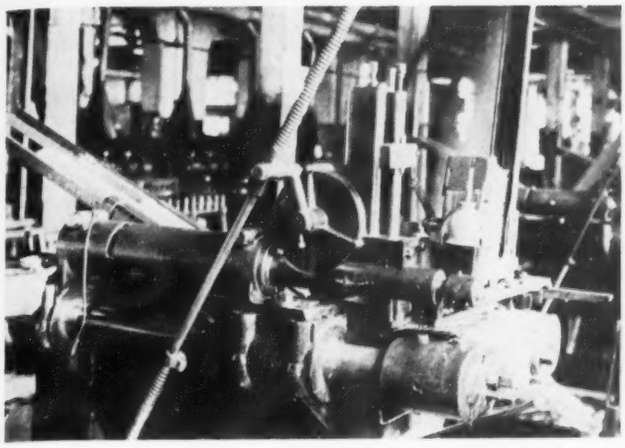
■ This is a rear view of the type of equipment used for cross-rolling. This mill is fitted with two hardened and ground, steel rolls, 5 inches long and 4 inches in diameter. Not an automatic operation, operator feeds blanks between the rolls. One roll is finished with a depression, as stock is cross-rolled at the bottom part only. As the blanks come from the rolls they fall into the chute in the foreground

■ Here is the operation of grade-rolling. As the blank is grade-rolled at one end only, it is necessary to make provision for this. Thus, the part of the roll coming in contact with the stock is a greater distance from the center than the remainder of the roll. In this operation, the operator feeds the stock against a stop on the upper roll so the rolling operation flattens lower end of the stock the requisite distance

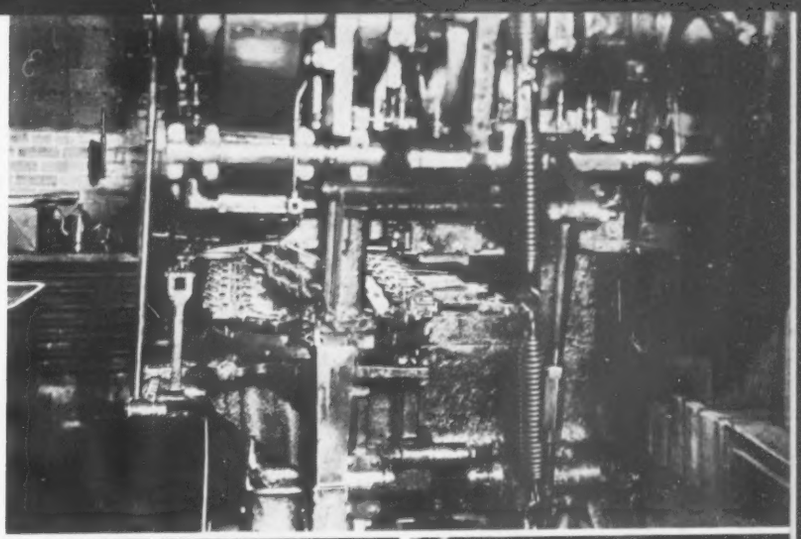


■ For teaspoon stock only is the automatic rolling machine at lower left. Blanks are put in locating devices on a conveyor, locked automatically, and carried under a set of rollers. Turned over automatically, they pass to the next set of rollers. Below is a press set-up for cutting out comparatively large spoons. The stock, shown in foreground, is placed against stop pins in the die and, as the punch descends, the desired outline is cut

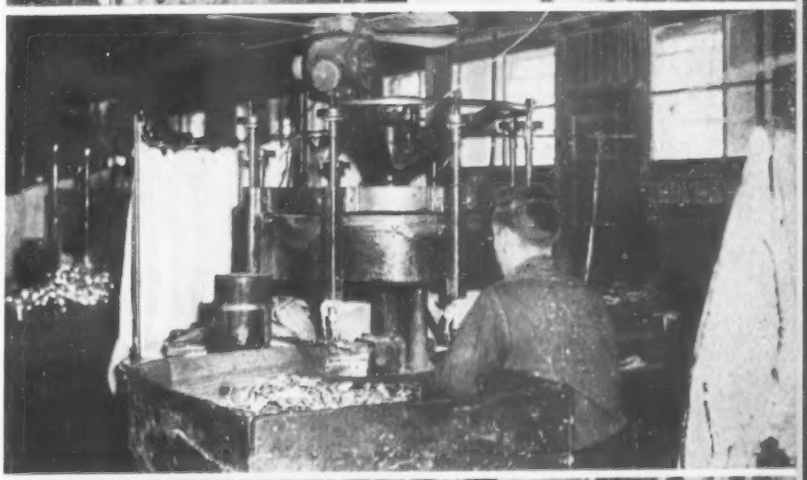




■ Above is a more complicated machine for blanking teaspoons. Punch is mounted on a horizontal ram. Stock is fed automatically from chute at right and blanks stack in the inclined chute at rear. Handles are formed under a 1500-pound Miner-Peck drop press with upper and lower dies, but upper right view shows automatic machine used for some types of spoons. Spoons are automatically clamped on a conveyor and fed under dies seen at right. Pressure of upper and lower dies forms shape and puts embossing in place



■ One stroke operation of raising bowls on Miner-Peck drop press with 1750-pound hammer is shown at near-right. Lower die forms the bowl and upper die is of reverse shape. Extreme right shows first tinning operation after spoons have been tumbled in sawdust, have had dirt and grease removed and have been dipped in a muriatic acid solution with zinc. Here spoons are lowered in a wire basket into furnace where 1800 pounds of pure tin are kept in molten state



■ In finishing, each spoon is fixed on end of vertical shafts shown, dipped in liquid salammoniac, dipped in molten tin, then rapidly whirled. With a beautiful and durable finish, spoons are dropped on a conveyor belt, cooled by air blast and conveyed to benches shown below

■ With elan, these young ladies inspect the spoons, throw out all imperfect ones—which are few—and skillfully wrap the finished product in paper in dozen lots. From here the spoons eventually find their way to city homes, farms, African safaris, or chuck wagons on the lone prairie

Winter Convention Of Electrical Engineers Reviews Welding Progress

■ RECENT progress in electric welding processes was reviewed in an illuminating manner during the five-day winter convention of the American Institute of Electrical Engineers in New York, Jan. 24-28. Resistance welding commanded major attention largely because of the precise and complicated controls which this process requires. Two convention sessions dealt with electronic controls in industry, particularly in connection with motors.

Welding machines have undergone marked improvement in the last few years, and this improvement undoubtedly is due partly to the more precise control now available, declared C. L. Pfeiffer, electrical engineer, Western Electric Co., Chicago, in presenting a committee report on resistance welding.

Advances, Mr. Pfeiffer said, may be classified under the headings of time, pressure and current control which are fundamental to all resistance welders. Perhaps the most noteworthy improvements have to do with the accuracy of the time period of current application. Controls whereby the primary current of the welding transformer is fed directly through either thyratron or ignitron tubes are coming into general use since they make practicable perfect timing of current applications in exact periods of one-half cycle or larger multiples thereof.

An auxiliary development to purely electronic timing is heat control which is accomplished by suitably delaying the ignition point of each tube for each half cycle of power current conducted and consequently cutting down the weld power for each half cycle, he explained. Probably stimulated by performance of electronic control, marked improvements in the operating speed of spot welding contactors has taken place. At the same time, a large number of devices have been developed for more accurately controlling these contactors.

Air-operated weld timers, he said, also are proving quite satisfactory on some classes of work and multiple control units are being used on automatic spot welders for controlling contactors and the motion of air operated heads.

Mr. Pfeiffer went on to say that pressure means on press welders, such as air cushion chambers in combination with cam action and the elimination of pounding are decided steps forward. Better synchronization of machine operation and control makes possible fully automatic spot and projection welders with semiautomatic feed and discharge of parts to and from the welding position, he said.

Flash welders afford much better flash protection and the jaw movements whether co-ordinated by cam, spring, air or hydraulic action or combination thereof have been much improved, Mr. Pfeiffer said. In addition, much higher capacities of transformer are being used and the kilovolt-ampere capacities considerably over 1000 are not at all unusual. Means for adjusting the welding current in smaller steps are more often provided, especially for nonferrous materials.

Milling Cutters Used

Some machines also are equipped with milling cutters to machine the work at contact points prior to welding which reduces the possibility of variable power input into the weld area in successive welding operations. The use of automatically operated resistance welders for accurate annealing temperatures as controlled by photoelectric cells focused on individual parts has reached a high degree of development, he said.

In discussing speed, Mr. Pfeiffer pointed out that wheel-type electrodes are used under conditions similar to seam welding for speeding up spot welding operation on strip materials. Longer periods of current interruption are employed with the wheel method, however, and consequently speeds as high as 120 feet per minute result. Special machines for assembling sheet steel parts and light frame work are more popular and are finding more applications outside the auto industry where they were first put to use. To reduce weight of the gun and lessen operator fatigue, large portable welders are being built of aluminum or magnesium alloys in the hydromatic type so that the pressure cylinder is only about 1 inch in diameter instead of 4 or 5 inches, he said.

Interrupted spot welding, sometimes called "persistence" welding is a relatively new method of welding heavy sheets up to 1 inch in thickness. In joining this material, Mr. Pfeiffer explained that a series of welding current impulses is sent through the electrodes of a conventional spot welding setup giving the weld area time to heat up at the point of fusion but allowing the surface in contact with the electrodes to remain relatively cool. This setup operates most consistently and with the best results by using electronically and automatically controlled timing periods, water-cooled electrodes and materials which spot weld readily, such as low-carbon steel.

Extends Resistance Welding

In discussing electrodes, he said his committee found that practically all users of resistance welding machines now use either die-type or tips made of special electrode materials. Use of these materials in die-type in combination with satisfactory cooling media makes possible the extension of resistance welding to a wide variety of special shapes including many not of sheet form. Many electrode alloys now are available, in addition to the tungsten-copper and cadmium-copper combinations. These include silver-tungsten and those which consist principally of copper but contain small amounts of chromium, molybdenum, cobalt, beryllium, silicon or zirconium.

Mr. Pfeiffer said the committee feels that more effort should be expended on standardization of transformer and secondary circuit performance of welding machines and that more co-ordination along these lines between manufacturers of this equipment is desirable. In the past, frequent criticism has been heard by the committee because many users of and even some manufacturers of resistance welding apparatus have operated on a decidedly rule-of-thumb basis. In

(*Please turn to Page* 59)

VANADIUM STEEL TOOL HOLDERS

. . . "Have proved to be practically indestructible"

Rough-turning locomotive tires and car wheels is a tough job — but the Gorham Serrated Shank Turning Tool does it very well and very economically.

An important part of this well-known tool is the Vanadium Steel Tool Holder which holds the cutting insert rigidly against the tremendous push of a 5/8" depth cut with a 3/16" feed.

"These Vanadium Steel tool holders," writes the Gorham Tool Company, "have proved to be practically indestructible. Some of them have been in constant use for a period of eight or ten years and are still giving satisfactory performance. We have instances of as many as 300 sets of locomotive driving wheels being turned with a pair of the round nosed serrated shank inserts, reducing the tool cost from approximately 15¢-18¢ per tire with the solid high speed tools to approximately 2¢-3¢ per tire with the round nose serrated shank inserts. Without the strength imparted to the shank steel by the Vanadium content, the wonderful performance of this type of tool would not have been possible."

You, too, can guard against failure of a vital part and enhance the reputation of your product by adopting Vanadium Steel — tough, strong, resistant to impact, high in anti-fatigue values. Metallurgists of the Vanadium Corporation of America will be glad to help you.

Gorham Heavy Duty Turning Tool made by Gorham Tool Company, Detroit, Michigan.

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METALS VANCORAM ALLOYS

FERRO ALLOYS
of vanadium, silicon, chromium, and titanium, produced by the Vanadium Corporation of America, are used by steel makers in the production of high-quality steels.

FOR STRENGTH · TOUGHNESS · DURABILITY

Advocate Least Squares In Analyzing Creep Tests

■ USE OF least squares for analyzing data obtained in creep tests has been found to eliminate "the personal error involved in graphical analysis," according to information disclosed by research physicists of United States Steel Corp., New York, in a paper presented before the American Society for Metals.

Creep tests carried on during the past year by R. F. Miller, R. F. Campbell, R. H. Aborn, and E. C. Wright, in the research laboratory at Kearny, N. J., show use of the least square analysis also "permits a more certain evaluation of an increasing or a decreasing creep rate, thereby rendering somewhat less uncertain values derived by extrapolation to longer periods." Mr. Wright is metallurgist of National Tube Co., subsidiary of United States Steel Corp.

In this research, tests were made on specimens of carbon-molybdenum steel and carbon-molybdenum-silicon steel of 0.505 inch diameter by 2.3 inches. All the tests on the carbon-molybdenum specimens were made at 1100 degrees Fahr., after seven different preliminary heat treatments which yielded different initial structures, at varying stresses for a period of 3000 hours. The carbon - molybdenum - silicon specimens were tested at temperatures of 850, 950, and 1100 degrees Fahr., at varying tensions and with preliminary heat treatments.

Outstanding among results disclosed by the tests on carbon-molybdenum specimens subjected to different heat treatments is that differences in creep behavior and in mechanical properties are definitely associated with differences in microstructure. A creep rate of 1.0 millionths inch per inch per hour was produced in the different specimens by stresses varying from 2300 to 3500 pounds per square inch, depending on the initial heat treatments.

Within the time and temperature ranges investigated, successively higher stresses tend to produce first a decreasing, then a constant, and finally an increasing creep rate.

The authors say that "the present creep tests do not permit us to state definitely whether the changes evident in the final, as compared with the initial, microstructure of the specimens are due mainly to the influence of time at temperature or in part to the influence of stress. According to present indications, the influence of stress is secondary, but in order to determine this point, specimens of this steel variously pretreated are now held for 3000 hours at 1100 degrees Fahr. under stress."

Both the linear and the parabolic creep rate were calculated for each specimen. When these rates were plotted against the respective stresses, a set of curves was derived which showed a divergence between the two calculations.

"Of the seven heat treatments investigated, the maximum creep resistance over the 3000 hour test period was developed by the preliminary treatment of tempering the normalized steel for 4 hours at 1300 degrees Fahr., which produced a fine groundmass precipitate, probably a molybdenum-rich carbide.

"The stability of this precipitate probably accounts for its lasting ability to improve the creep resistance of the alloy. The structure produced maintained a constant (linear) creep rate at higher stresses than did the structures resulting from other treatments, and the tendency to an increasing (accelerated) creep rate at higher stresses seemed to be least for this treatment and maximum for those specimens showing the greatest changes in microstructure during the creep test. The behavior of the precipitate as demonstrated by the changes in microstructure offers a tangible reason for the improvement in creep resistance imparted to steel by the addition of molybdenum.

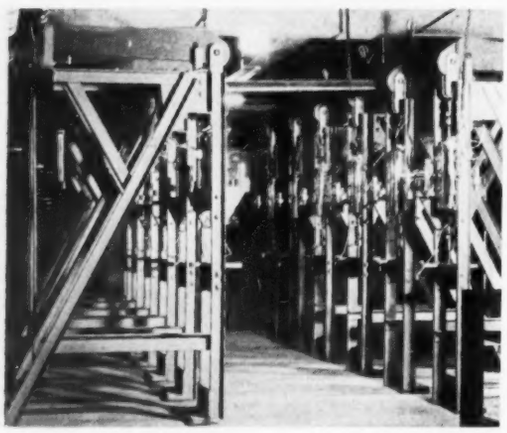
"Creep tests on a normalized and tempered chrome-molybdenum-silicon steel indicated that a stress of 28,500 pounds per square inch was required for a creep rate of 0.13 millionths inch per inch of length per hour at a temperature of 850 degrees Fahr. At 950 and 1100 degrees Fahr. stresses of 19,750 and 6250 pounds per square inch were required for a creep rate of 1.0 millionths inch per inch per hour. Annealed chrome-molybdenum-silicon steel was found to possess slightly greater creep resistance at 1100 degrees Fahr. than the same material which had been normalized and tempered.

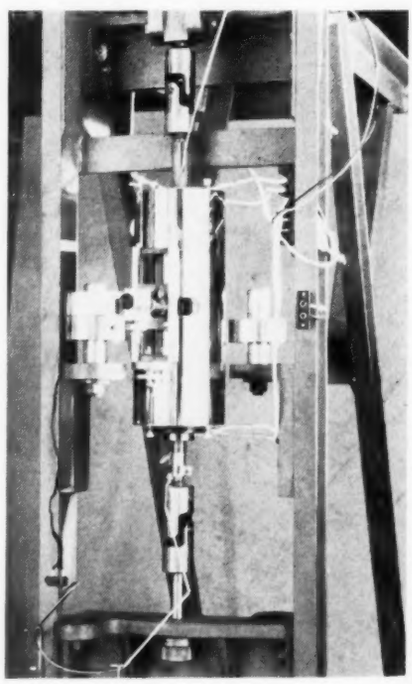
Tensile Hardness Altered

"The tensile hardness and impact properties of the carbon-molybdenum and chrome molybdenum-silicon steel were somewhat altered by time at temperature under stress toward lower strength and slightly higher ductility. In many cases, the changes in the mechanical properties could be related to corresponding changes in the microstructure.

"There were indications that for any one heat treatment and testing temperature, the higher the stress employed in testing a given steel, the higher were the final impact and tensile strength."

In connection with the creep testing specially-designed electric furnaces were used in the laboratory.





Left view shows battery of specially - designed creep test furnaces in laboratory of United States Steel Corp., at Kearny, N. J. At right is close-up of one of these electric units

A feature of the special type furnace is that creep test readings may be made by a single microscope, as a result of placing reference marks on tiny platinum cubes embedded in fingers attached to either end of the specimen so that both come within vision range of the microscope. Pinions alongside the furnace make it possible to use a portable microscope, and an electrical outlet is also available at each furnace for plugging in microscope light. All equipment is enclosed so results of tests are not affected by changes in room temperature.

Furnaces are designed to operate at a minimum of heat loss. Leverage ratio of the fulcrum arm at top of each furnace is 9 to 1, and weights which produce tension are placed on the rod at the rear of each.

Unique Walking Dredge Fabricated from Steel

■ SOMETHING new in the history of dredging is seen at work lately on the west side of the Illinois river, at Peoria, Ill., where a so-called "walking" dredge unit is busily engaged in moving around 175,000 yards of river bottom into a low-lying site north of the R. G. LeTourneau factory. Not only is the design of the craft new, but the operating principle allows much faster action and results in very large capacity for the size of the unit.

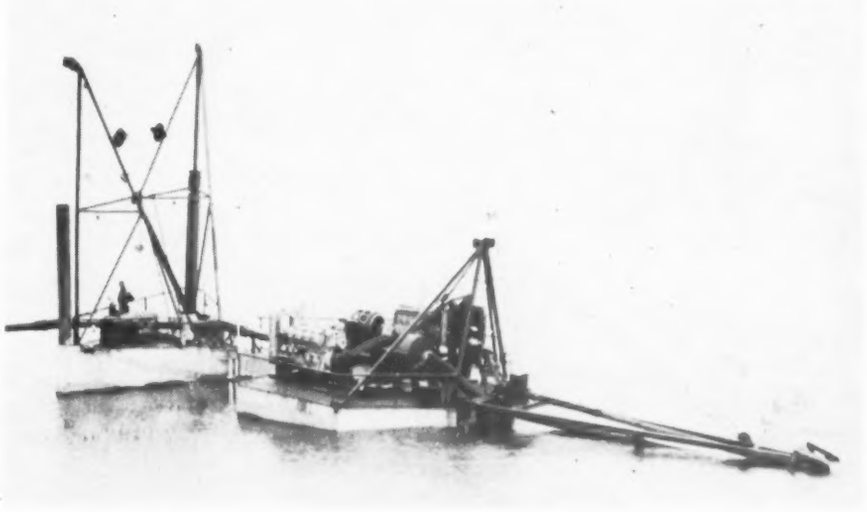
If two floating units are hinged together, with proper clearance to allow their swinging on the hinged joint relative to one another, and if powered cable lines passing over properly aligned sheave units are used to connect the two structures, provision being made for allowing slack in one line while the other is taken up by power, it is possible to swing one relatively to the other. If one of the units be anchored so it cannot turn, the swinging action will localize in the other. This is the principle of the mechanical walking action of the dredge, accomplished in following manner.

A triangular tail float supports a vertical steel framework, holding sheave assemblies at the top, and such other guide sheaves as are necessary. Lines passed through these sheaves support and operate two spuds 33 feet in length, which are governed in their vertical travel by passing through a hollow beam welded into the tail float. Only one spud is lifted at a time, at which time the cable takeup between the two portions of the craft on that particular side is operated, pulling the tail portion forward. The spud is then dropped, giving the tail craft a two-point anchor and making it temporarily rigid, while the lines are operated to swing the front portion of the craft, carrying the cutting gear. The next "step," of course, is taken with the opposite spud.

The craft is arc-welded throughout. A pump of special LeTourneau design, with 3000 gallons per minute capacity, is powered by a Caterpillar D-17,000, V-8 engine. A second Caterpillar diesel engine, 6-cylinder type, furnishes power for the mechanical action of the dredge directly, and indirectly, through the operation of a generator, furnishes electric power for lighting and also for revolving the cutter unit. The generator is operated by one end of the power transmission shaft of the diesel unit, while the other end of the transmission shaft powers a five-drum cable-operation unit.

Five Drums Required

The unit for cable operation is not the least interesting part of the device. Although similar power control units have been used in many different cable-operation applications where one, two or four drums were needed, each drum being individually operable at will, this is the first application, so far as is known by the writer, where five drums were required or used. Two cable lines are used for controlling relative swing between the main, octagonal-shaped hull and the triangular tail float, and two others are used for operating the two spuds as mentioned. The fifth line is needed for raising and lowering the hinged unit carrying the cutter and the suction line leading from the pump to it.



This twin-sectional dredge of unique design "walks" on the bottom of the river

Map Shows Location of Iron and Steel Plants

■ *Map of Iron and Steel Works of the United States:* available in three sizes, 22 x 17 inches; 44 x 34 inches and 66 x 48 inches; paper, cloth back, wall board back, or roll type; published by J. H. H. Muirhead, New York; supplied by STEEL, Cleveland, at prices ranging from $1 to $7.50; in Europe by Penton Publishing Co. Ltd., Caxton House, London.

This map is based on data in the *Iron and Steel Works Directory of the United States* published by the American Iron and Steel institute and supplemented with additional information to make it up-to-date in every respect. All cities, towns and villages having iron and steel works are designated to show the location and extent of the industry at a glance. So many plants are located in Eastern Ohio, Pennsylvania and New Jersey that a large-scale map is inserted in one corner.

Below the map is a list of the firms or companies operating in each place. Classification of the industry is indicated by letters in front of company names referring to the index. When no letter is given, the product of a works is specialized.

Products are classified under the following headings: pig iron and ferroalloys; ingots and other semi-finished material; bars-merchant and concrete reinforcing; rails and track accessories; structural shapes including steel piling; plates—sheared and universal; sheets and strip—hot rolled; wire rods; skelp and seamless tube blanks; pipe and tubes; sheets and strip—cold rolled; tin mill products; bars—cold drawn; wire and wire products.

IT PAYS TO ASK THE MEN WHO KNOW

The manufacture of a spring form does not always run as smoothly as planned.

The spring shown above is a typical example. The designer specified annealed wire to withstand the sharp bends, relying on subsequent heat treatment to impart spring temper. Brittleness was encountered in the finished piece. Then a sample was sent us. Wickwire Spencer experts immediately recognized a known difficulty and recommended a wire slightly cold worked after annealing that would form successfully and possess excellent spring quality after final heat treatment.

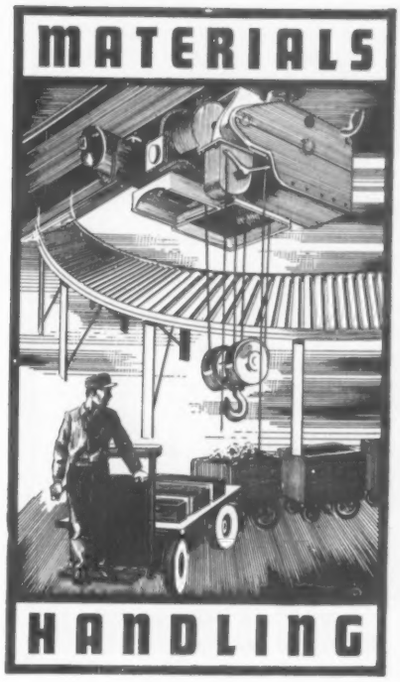
Manufacturers are urged when planning production to send in a wire form or spring and description of its use for our recommendation as to the correct wire to be used. This service costs you nothing yet may save you endless trouble, delay and expense in struggling with a problem that our engineers have successfully met again and again.

WICKWIRE SPENCER STEEL COMPANY

New York City, Buffalo, Chicago, Detroit, Worcester. Pacific Coast Headquarters: San Francisco. Warehouses: Los Angeles, Seattle, Portland. Export Sales Dept.: New York

Wickwire Spencer manufactures High and Low Carbon Wires—in various tempers, grades and finishes—for your specific purpose. Hard-Drawn, soft or annealed Basic or Bessemer Wires—Hard-Drawn annealed, or oil-tempered Spring Wire, Chrome Vanadium Spring Wire — Valve Spring — Music — Clip — Pin — Hairpin—Hook and Eye—Broom—Stapling—Bookbinding—Dent Spacer Wire — Reed Wire — Clock — Pinion — Needle-Bar—Screw Stock—Armature Binding—Brush—Card—Florist—Mattress—Shaped—Rope—Welding. Flat Wire and Strip Steel, High or Low Carbon—Hard, annealed or tempered—Clock Spring Steel—Corrosion and Heat Resisting Wires. Consult the Wissco technical man on your wire problems, however large or small.

Wissco Wire
by Wickwire Spencer



Economical Handling With High-Lift Trucks

■ REACHING for, picking up and returning the body to normal working position requires much more time than is generally believed. Also, the repeated stooping, bending and reaching is fatiguing.

Ordinarily, in handling parts from box trucks, either the box is dumped and the parts picked up from the floor or the worker reaches down into the truck. Using removable sides approximately 6 to 10 inches wide makes the work easier but considerable reaching is still necessary for work in the lower layers when the box sits on the floor or skid.

A simple arrangement of steel, end-dump, lift-truck boxes is being used to overcome this waste of time and effort. Instead of dumping on the floor, the box skids are set on a special work table by a high-lift elevating-platform truck. This work table is of welded steel construction with one end open and built up higher than the flat work section. The box skid is set on this so that the skid legs next to the truck rest on the high end.

The platform of the truck is then lowered until the other end of the skid rests on about the center or level part of the work table. The truck can then be removed.

Opening the endgage of the box skid allows the parts to flow out on the work space as needed. The box skid is inclined at an angle of about 30 degrees from the horizontal so parts slide out by gravity, within reach of the worker. If they should dam up, the operator, without leaving his position, can start them flowing by using a hook.

Used at Machines

The work table is constructed at working height. This table is used for handling forgings and castings at machines where operator, engaged throughout machining cycle, has no time to reach for the next piece.

Another use is for handling forging blanks. The work table is at the proper height for feeding to the heater, which also is placed at the same level as the hammer dies. The forgings are tossed into a similar box truck to be carried to continuous heat treating furnaces and from these to the machines or shipping department. A similar work table is used to place the parts within convenient reach of the man feeding them into the furnace. The parts are discharged from the furnace into a box skid for additional handling.

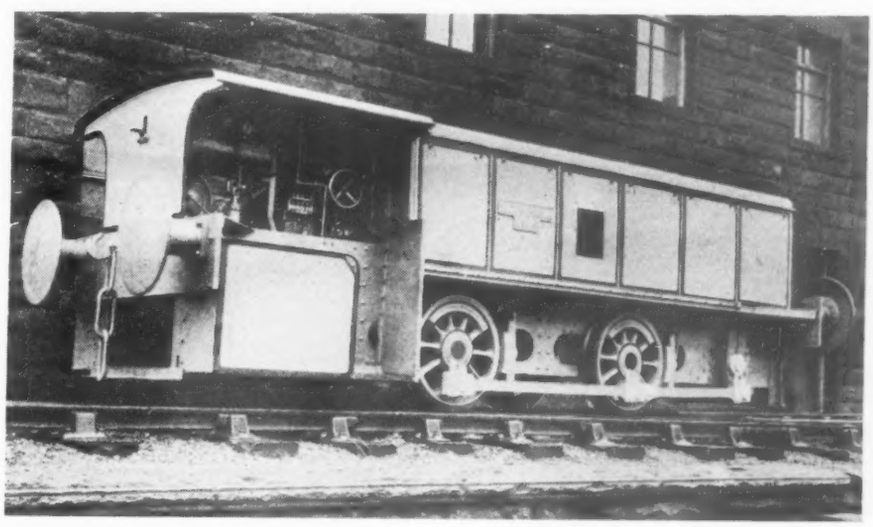
Such an arrangement, of course, requires high-lift or tiering trucks. The special work tables and skid box supports are constructed by welding standard structural shapes with steel plate for the table surface. One end must be open so the truck can enter.

The high-lift trucks and end-dumping box skids are also used for loading forgings and castings in motor trucks and box cars. The loaded truck is run into the motor truck or car, the box skid set down, the truck backed up so the platform will be under the outer end of the box skid, the endgate is loosened and the platform and one end of the box raised and pulled back until the box is empty.

Lowering the platform and running the truck forward permits replacing the box skid on the truck for removal. By setting the skid load so that it projects beyond the end of the truck platform but still in balance (this is an overload and the weight handled should be well under the rated capacity of the truck), loads of castings or forgings may be piled in the car, although usually some pieces must be cleared out of the path of the truck to permit it to get closer to the pile.

The castings or forgings roll or slide out of the box trucks without dropping and so are in no danger

England Has Reversible Diesel Locomotive



■ **Claimed to be the first locomotive with a reversible diesel engine, this unit was built for hauling large steel ingots by Messrs. Robert Stephanson & Hawthorn's Ltd., Forth Banks Locomotive Works, Newcastle-upon-Tyne, England. Restricted to height of 7 feet 3 inches, it can haul heavy ingot bogies through low tunnels and has but two speeds, three and six miles per hour. It is driven by a Crossley 4-cylinder scavenge-pump, two-stroke, reversible oil engine with air starting. It has a two-speed, epicyclic gear box and compressed air is used for operation of clutch, changing gears and brakes. Controls are duplicated at either side**

of damage when handled in this way. The box skids are of heavy corrugated steel plate with a hinged endgate which is held closed by removable pins. The first boxes purchased were of metal that wasn't heavy enough. When used at the forging press to receive hot forgings they buckled out of shape. Heavier boxes have corrected this. Loaded skid boxes are stored until a carload is ready. Empty skid boxes are tiered by the same trucks by setting two planks on top of the low box skid.

This arrangement has proved very economical both in elimination of waste time for reaching and in rapid unloading of heavy loads by dumping without breakage. The truck operator can load a car alone although he usually has a helper to clear the floor of forgings or castings that roll out in the path of the truck.

Plant Operates Trackless Railway

■ Spang-Chalfant Co., Ambridge, Pa., operates a trackless railway system covering its entire plant. Rolling stock is composed of a tractor and ten 4-ton trailers. Clarktor-6 tractor is manufactured by Clark Tructractor division of Clark Equipment Co., Battle Creek, Mich. It has a 6-cylinder truck engine with self-starter

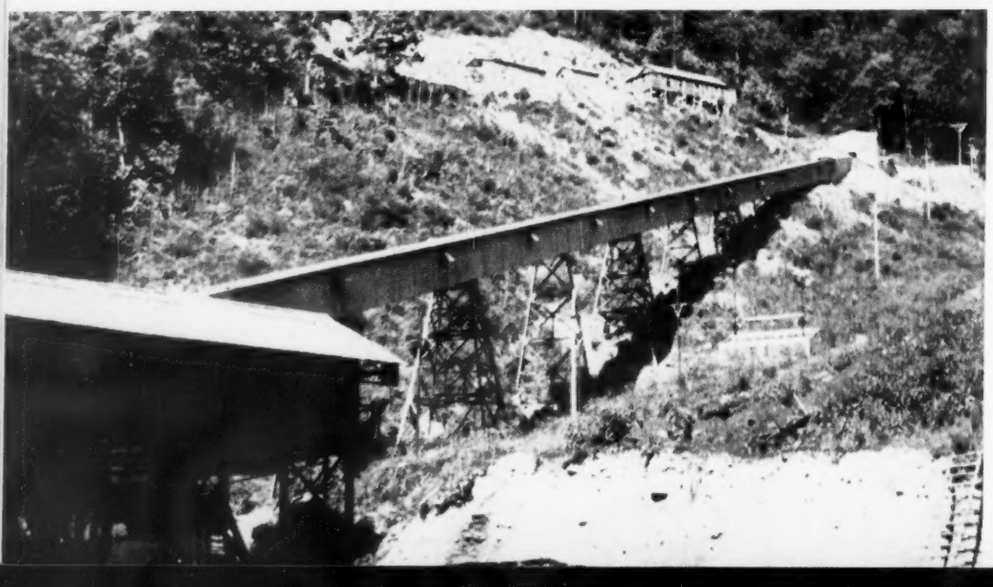
Speed of Belt Conveyor Is Maintained Constant

■Regenerative braking provides a satisfactory and economical means for controlling the speeds of long belt conveyors operating down grade. The accompanying illustration shows a coal mine car dump connected with the tipple by an 858-foot belt conveyor on a 15 per cent grade. Speed of this belt is maintained constant by an ingenious regenerative braking control supplied by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Capacity of the belt is 500 tons per hour at a speed of 300 feet per minute with a total load of coal of 27 tons from the feed end to the discharge end of the belt. Power is supplied to the empty or partially-loaded belt by an induction motor, starting with reduced voltage. Full voltage is supplied automatically after sufficient speed is attained. When the belt is loaded, the same motor acts as a brake generating at 350 tons per hour 52 horsepower back into the line.

Safety features of the installation include auxiliary brakes in event of overspeed. Pushbutton control is provided for starting and stopping operations.

Speed of the 858-foot belt conveyor connecting this mine car dump and tipple and operating down a 15 per cent grade with a 27-ton load of coal is maintained constant by regenerative braking control



Trucking Confined to Raw Material, Finished Parts

■ A company manufacturing assembled units for trucks and tractors, units which differ mainly in the size and dimensions of the enclosing castings and to some extent in the shafts and other internal elements, has so mechanized its machining and assembly operations that handling by trucking is confined to raw materials and finished parts. The units are standardized as to shape and general dimensions and in the manufacture of the component parts each part is scheduled to a definite machine or group of machines, the tools being reset as necessary.

These machine groups vary from one to five units and work is passed on from one machine to the next by chutes or gravity roller conveyors. In two cases where the parts must be elevated to cross an aisle, sharply-inclined belt conveyors with crossbars lift the parts to the necessary height and discharge them into a chute or onto a roller conveyor. In some groups the machines are in lines, in other cases they are set in a semicircle and in one instance in parallel lines, the arrangement being determined by floor space and travel of the work.

Piled in Box Skids

Castings, forgings and shafts are taken to the first machine in each group in box skids on lift trucks. Finished parts from the last machine in the group are also piled in box skids, or, in the case of highly finished parts, are placed in special partitioned holders on skids, which serves to keep the parts separated.

Skid loads of finished parts are taken directly to the assembly conveyor or to temporary storage and later set along the conveyor beside the assembler who is to use them. As the units are not assembled in large quantities, an assembly run varying from one to ten days, much of the work from the machines goes into temporary storage.

Assembly is performed on a continuous apron conveyor so that the assemblers may rest the work or tools on it or even stand on it. Special swivel assembly heads spaced about 10 feet apart on the conveyor clamp the main casting. The

(Please turn to Page 67)

THE ALCHEMIST
by ADRIAN VAN OSTADE
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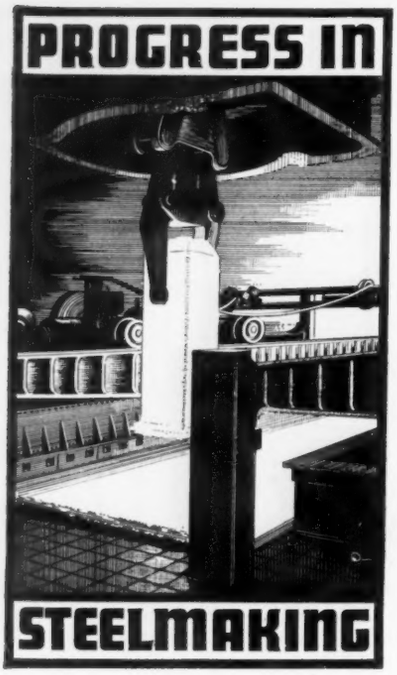


Heating Slabs

Three continuous, triple fired, zone controlled furnaces permit efficient operation at varying tonnage rates. Each is rated at 50 gross tons of cold slabs heated per hour for new continuous sheet and strip mill

■ THREE continuous slab heating furnaces serving the new continuous sheet and strip mill of Jones & Laughlin Steel Corp., Pittsburgh, are of the triple fired, zone controlled type. Use of zone firing permits efficient operation at varying tonnage rates.

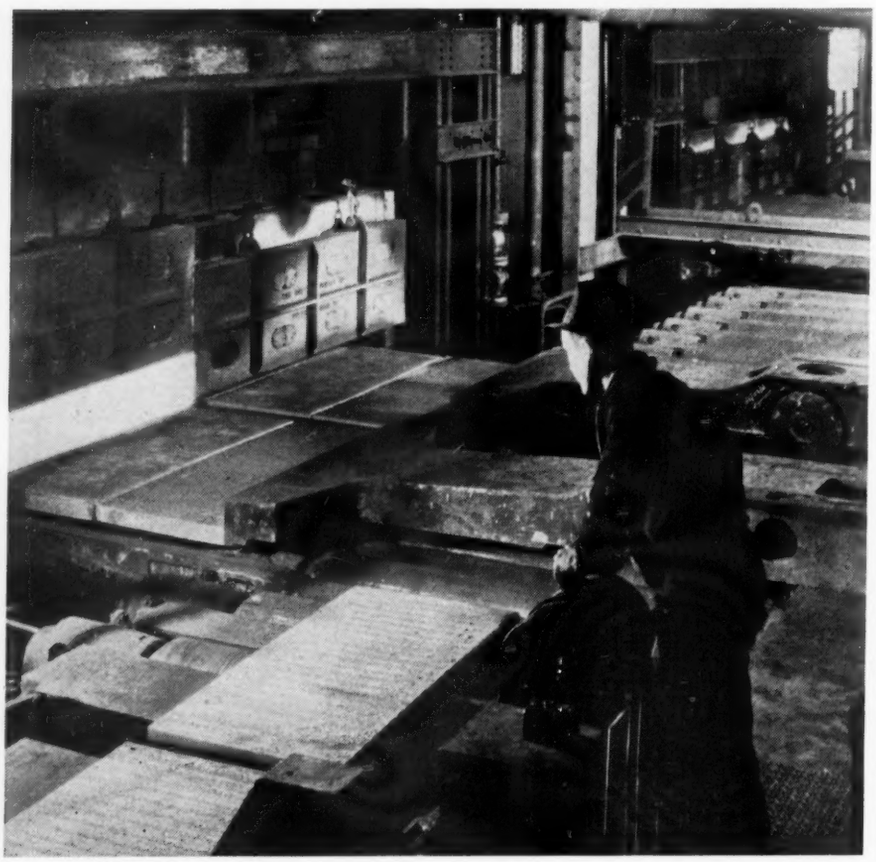
Main heating zone is designed for both top and bottom firing, with six gas burners spaced across the width of the furnace above the steel and six burners similarly spaced below the stock. Variation in rate is obtained by varying the burners in this primary heating zone and full advantage can be derived from the maximum available flame temperature because, in this zone, the steel is being brought up to temperature and can absorb large amounts of heat.

Secondary heating zone is fired only above the steel. It has eight gas burners spaced across the width of the furnace. This "soaking zone" is usually held at a constant temperature and a constant firing rate. The combination of two specialized heating zones permits uniform heat distribution while preventing excessive scale loss during variable rates of operation.

The furnaces are about 100 feet long including the brickwork, and have an effective length of 80 feet. They have an inside width of 18 feet, and can heat slabs ranging in length from 7 feet 6 inches to 16 feet and in widths from 20 to 60 inches, in thicknesses from 3 to 6 inches. The furnaces are set up for heating a double row of 7-foot 6-inch slabs. Each is rated at 50 gross tons of cold slabs heated per hour.

Coke gas or tar can be used as fuel. Fuel consumption, when heating cold steel, is estimated at 1,650,000 B.t.u.'s per gross ton of steel heated to rolling temperature. All the air required for combustion is supplied to the burners through a high temperature exhauster which receives its supply from the recuperators located beneath the furnace.

The furnaces, of the Rust type, built under United States patent



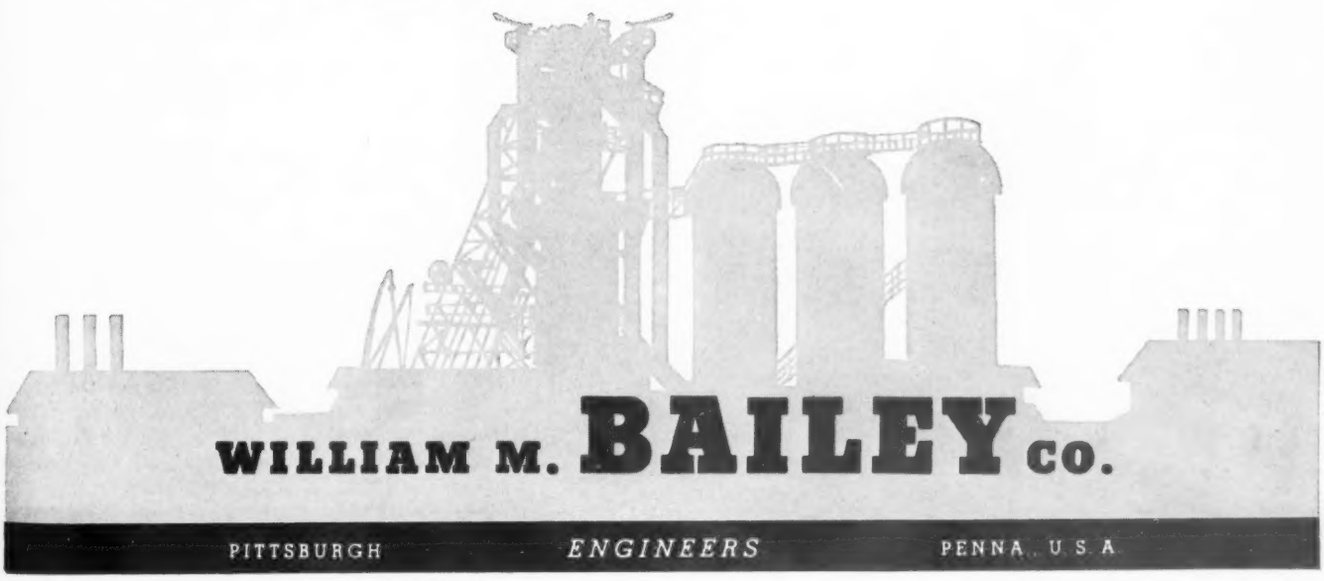
Charging end of the Rust slab heating furnaces showing ram-type, motor-driven pushers used for charging double rows of short-length slabs. Photos courtesy Jones & Laughlin Steel Corp., Pittsburgh

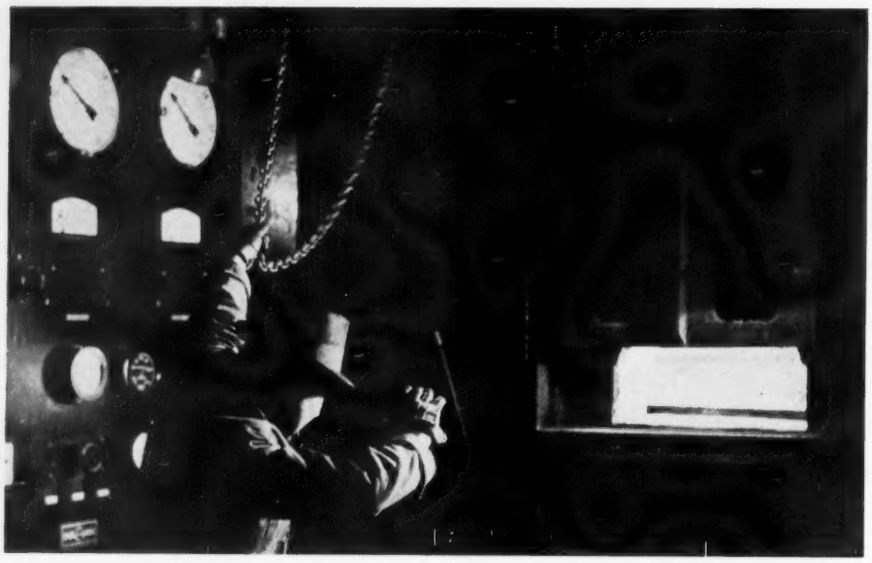
The Thermal Expansion Goggle Valve

The THERMAL EXPANSION GOGGLE VALVE is a ruggedly designed, fool proof mechanism for the proper control of gas flow in blast furnace, gas washer and boiler plant gas mains. It functions by means of thermal expansion or contraction of metal tubes, thereby opening or closing flanges to free or clamp the goggle plate.

Materials and construction of these valves are such as to insure an indefinite life; to prevent accidents, due to leaky fittings and to reduce maintenance to an absolute minimum. They are designed for use in either vertical or horizontal mains; hot or cold, dirty or clean gas mains. They operate quickly and surely and are always gas tight.

With approximately 250 of these valves installed in the United States, England, South Africa and India, representing a total investment of over $600,000.00, surely, their principle and economy is of proven merit. . . May we mail you illustrative and descriptive bulletin?





Looking into a furnace interior; indicating gages and setting dials are shown on the control panel at left

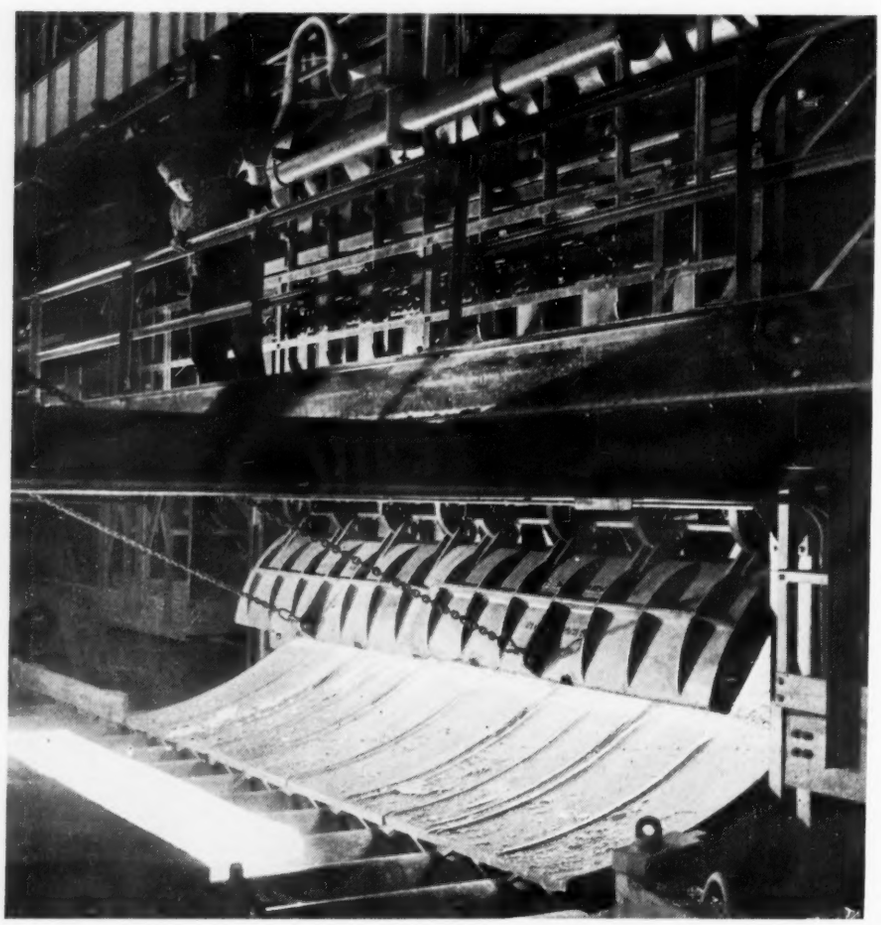
No. 1,912,933, are equipped with complete combustion control, as manufactured by Hagan Corp., Pittsburgh. A constant air pressure is maintained as hot air is supplied to each burner. The furnace pressure is held constant by means of automatic stack damper regulation. Air-fuel ratio regulators are provided and these, together with the necesary indicating gages, equalizing valve, mounted on a control panel board.

All three furnaces are equipped with Rust refractory tile recuperators. These are designed to deliver air at about 800 degrees Fahr. when furnaces operate at rated capacity. All of the side walls and furnace roof are thoroughly insulated, not only to save fuel but to make operating conditions more comfortable for the men around the furnaces. Stack temperatures are held between 1000 and 1100 degrees Fahr.

A tight closing discharge door prevents air infiltration at the delivery end. These doors are operated by means of an electrically driven mechanism. The charging doors are thruster operated. In charging, the slabs are first brought by cranes to a depiler which transfers them to the furnace entry table. The slabs are then sent into each furnace by means of a ram type, motor driven pusher.

Water cooled skids extend from the charging end up to the secondary heating zone, where the solid hearth starts. This soaking hearth, consisting of refractory materials and 6 inches of chrome ore, is necessary to permit uniform heat distribution throughout each slab and to remove the black spots caused by the skid pipes in the primary heating zone.

Delivery side, showing the runway and tight-closing discharge door. Discharged slabs are uniform in color, an indication of uniform heating



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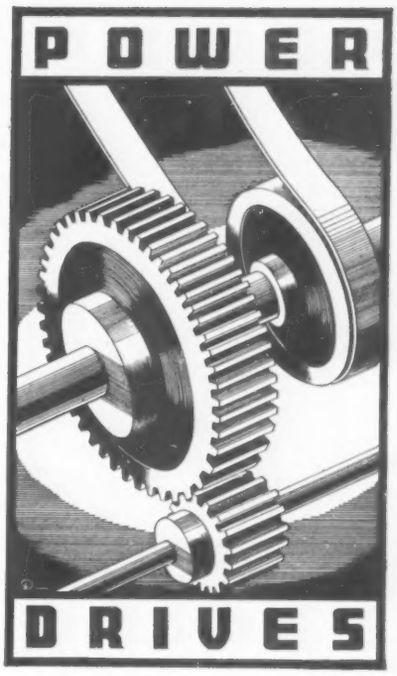
Texas College To Hold Conference on Welding

■ Texas Technological college, Lubbock, Tex., announces its third welding conference to be held Feb. 3-4, under sponsorship of the department of mechanical engineering. All persons interested in welding are invited to attend. Manufacturers of electric and oxyacetylene welding equipment will exhibit and demonstrate their apparatus. The program includes technical papers, lectures, and motion pictures. Prof. J. C. Hardgrave is directing the conference.

New Furring System Recently Developed

■ Newly announced by Milcor Steel Co., Milwaukee, are a new furring system for solid partitions and a new cove lath. The furring system is to be used as a fireproof plaster base for solid partitions and also makes possible erection of a free standing furring wall. Three operations are involved in erecting the steel ceiling angle runner, slotted channel stud and continuous crimped floor runner used in building the wall. The new cove lath is made from 3.4 pound diamond mesh lath electrically welded to curved channel sections spaced on 16-inch centers. This preformed cove can be used over any type base, according to the makers.

Better Lubricant Handling Reduces Bearing Troubles



■ BEARING trouble in a large midwestern plant was traced back to improper handling of oil and grease in the various departmental store and toolrooms.

Oils were purchased by the barrel and grease purchased in large cans. These supplies were issued to the toolrooms in any convenient container, or an entire barrel or large can was sent to the toolrooms. Sometimes these containers were not clean or had poorly fitted covers. Contamination in storage had been responsible for the bearing trouble.

A careful investigation of the handling of lubricants also discovered that about 30 to 40 trips were made each day from the departmental toolrooms to the main storeroom to replenish supplies which had become exhausted. Assuming 20 minutes as an average time spent on these trips, 10 hours or more wasted time per day was indicated.

Organize Handling Methods

The revised system of handling lubricants organized the methods of handling in the general storeroom and toolrooms as well as the distribution to the toolrooms. First a dustproof room was built adjoining the general storeroom for storage of lubricants, paints and other oils and liquids used in the plant and distributed to the various department toolrooms or supply stores. Highly volatile liquids are stored in underground tanks. Most of these items are fire hazards and also subjected to dust damage and contamination in handling. All liquids are now stored in pump tanks. Lubricating oil tanks each hold a little more than two barrels and are plainly indentified with the class and type of oil contained. Grease is purchased and stored in barrels.

Instead of using any type of container in the toolrooms, smaller pump tanks varying from 2 to 10 gallons capacity, according to the needs of the various departments, were placed in the toolrooms for the oils and liquids handled. Cans of grease, 2 pounds and larger, were issued to the various departments. The contents of these cans are marked by the maker so are easily identified. When empty they are sent back to the main storeroom to be refilled. Also, these cans have good tight covers.

A supply of hand oil cans was also issued to the toolrooms, each can identified with the type of oil contained. Whenever a worker brings in an empty oil can he is handed a filled can and the empty can refilled and placed on the shelf as soon as the toolroom helper is free. This eliminates waiting at the toolroom window.

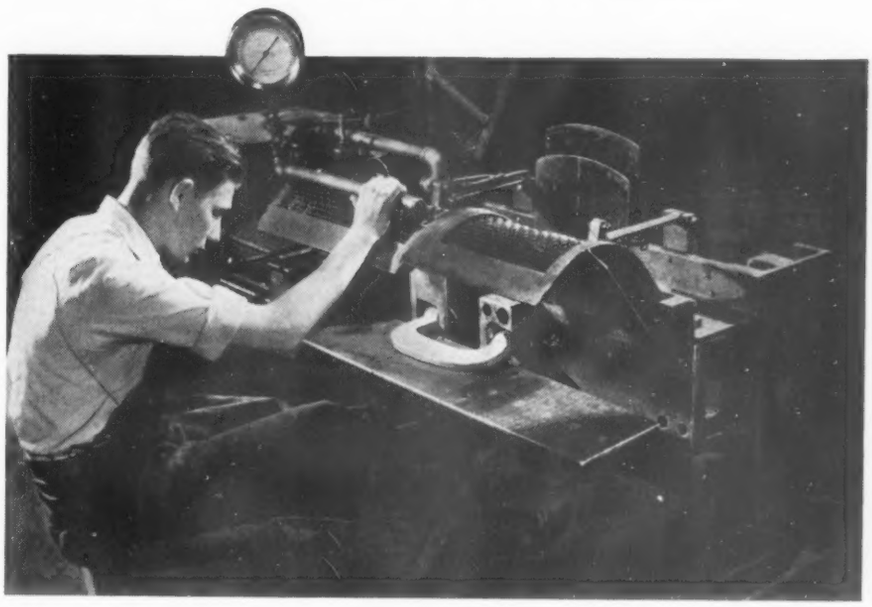
Make Daily Deliveries

Instead of sending to the general storeroom for oils and greases and the other liquid items in frequent use in small quantities, they are delivered to the various toolrooms daily. Compartment measuring pump tanks with capacities varying from 10 to 20 gallons are mounted on a skid platform for an electric truck. Filled cans of grease are also carried.

Each morning a trucker makes the rounds of the 20 toolrooms, refilling the tanks and replacing any empty cans of grease. If a can is partially empty a filled can is left and the empty can picked up the next morning. The trucker measures oil as issued and so keeps a record of the supplies for each department.

Since this plan was installed, extra trips to the general storeroom have been practically eliminated. The trucker makes the rounds in less than 3 hours, which means a saving of over 7 hours per day in handling. This plan has eliminated much of the wastage of oils resulting from the former inefficient method of handling. The tight grease cans and restriction of re-

Builds Own Clamp Testing Machine



■ **There being on the market no suitable machine for testing, with as high as 14 tons pressure, the forged steel clamps manufactured by Cincinnati Tool Co., Cincinnati, the company built the one illustrated. Machine not only applies a load as desired from a few hundred pounds up to fifteen tons, but also enables determination of amount of permanent set in the clamp under test**

filling to the main storeroom also prevent contamination.

On its trip, the truck also carries gasoline, naphtha, alcohol and some other liquid supplies in addition to the lubricating oils, for departments using them in small quantities. Separate, larger containers, also on truck skids, are used to deliver to departments using in large quantities.

In addition to the saving in delivery time and reduction in inventory in toolrooms, most items are now purchased and stored in larger quantities at a reduction in cost per unit.

Also, purchasing is now more easily controlled, as under former conditions the storeroom never knew how nearly empty the oil barrels in the various toolrooms were. The savings in handling and purchasing more than repaid the cost in the first year. The decreased bearing trouble, which was not included in this estimate, was an additional profitable saving.

Manufacturers Often Face Problem of Own Repairing

■ PLANTS of medium and large size are always faced with the question of whether to make repair parts of equipment and how far to extend their facilities for repair work. This is particularly true of electrical repairs in connection with rewinding motor coils.

Some of the questions arising in connection with a decision on this question are: How much repair work is necessary? Will one or more men be kept busy? What would rewinding, dipping and baking equipment and supplies cost? Is a shop specializing in this work or does the equipment manufacturer maintain a stock of repair parts or service shop within convenient distance? Is the motor equipment sufficiently modern and standard so that stock parts may be kept on hand or quickly available from local distributors? Are spare units on hand or are many motors special so that spare units would be uneconomical?

Today few plants in large cities will find that a motor repair and coil-winding department is profitable except where the nature of the work or surroundings cause an excessive amount of repairs and rewinding. A motor can be delivered to a local repair shop or to the service shop of the manufacturer and the work done as quickly and economically as in the repair shop of the plant. Often, motors may be rented while the repair is made.

Isolated plants and those located away from large cities must rely on an ample stock of spare units or do the work themselves. The extra expense of shipping usually makes a plant repair shop economical even though the cost of the work is greater than if performed elsewhere. In such cases every effort should be made to stock coils, especially on standard equipment, where a coil will not be stored too long and deteriorate.

Storing coils for special motors is seldom recommended, although if the motor shows signs of probable early failure, it may be economical to order a set of coils from the manufacturer. Coils stored for a long time are likely to be damaged or deteriorate so when needed they may be useless.

If the amount of work is not sufficient to keep the repair man busy, and coil winding dipping and baking equipment must be installed for emergency work, all coil making may be an economy. However, before adding to the repair force, the purchase and storage of standard coils is recommended.

Coils for old motors that are no longer standard products of the manufacturer are no longer kept in stock, and thus are more expense as they must be made to order. Many plants equipped for repairs find that coils for such equipment may be rewound in the plant as economically and quickly as ordering from the manufacturer.

Careful and complete costs of all repair work, including materials, labor and department overhead, will indicate when coils can be bought or made to advantage. Without such costs no department can operate economically.

Should Junk Equipment

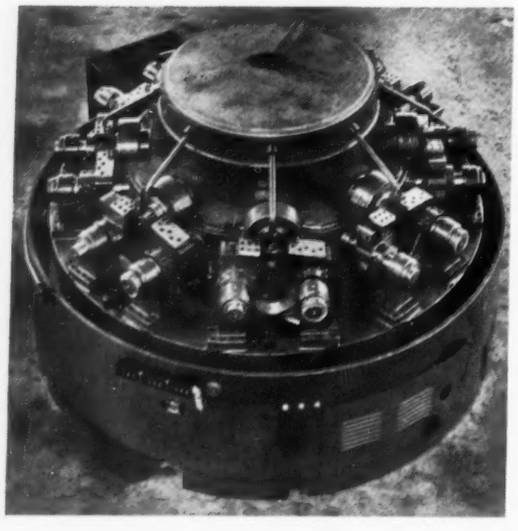
One common tendency, where a plant does all its repair work, is to rebuild equipment which is fit only for junk just to keep the shop busy. If repairs were on a cash basis the head of the department would hesitate to authorize the expenditure on such old equipment. Where the department is not very busy unnecessary work may be created for fill-in time.

But, on the other hand, when work is sent out, or an outside repairman brought in, some managers are inclined to patch up to keep the cost down when the most economical repair would be entire new coils.

When repairing electrical control equipment and electric tools, homemade repair parts are seldom satisfactory in utility, reliability or life. Parts may be kept on hand for such repairs. Homemade parts should be considered only in an emergency and then replaced as soon as new parts are obtained.

With practically all maintenance departments equipped for welding, in addition to ordinary machine tools, mechanical repairs are as economically made in the shop as when sent out. In many cases these may be made without moving the motor or other equipment, thus decreasing cost of repairs.

First Product of New Plant



■ **First commercial unit produced in the modern new plant built by Austin Co. for Partool Machine Co., Detroit, is this 8-spindle, horizontal, rotary lathe for turning flanged bodies used in automobile drive universal joints. Base is of fabricated steel and head is of cast iron**

Electrical Engineers' Convention Reviews Recent Welding Progress

(*Concluded from Page* 46)

closing, he said that attempts are being made to put resistance welding on something approaching a quantitative, scientific basis and some progress has been made by the introduction of various simple meters and measuring devices, especially adopted to peculiar requirements, such as means for measuring the time of current application, electrode pressure meters and instantaneous-type current meters employing a gaseous glow lamp as the measuring element.

C. E. Heitman, Edward G. Budd Mfg. Co., Philadelphia, also made a plea for co-operation among transformer manufacturers on standardization at the session on resistance welding. The present method of rating resistance welding transformers varies with different manufacturers, he said, causing a certain amount of confusion among the users of this equipment. He urged that a standard method of rating, based on the thermally equivalent continuous output, be adopted and adhered to by the manufacturers.

Describes New Control

F. H. Roby, sales engineer, Square D Co., Milwaukee, described a new mechanical high-speed resistance welder control by which operating speeds of 350 or more welds per minute are made practicable for pneumatically-operated portable welding tools. Demand for high production rates in the automobile and related industries has resulted in the adoption of this type of equipment, he said. Fully automatic repeat control devices are needed to obtain maximum operating speeds without sacrificing quality of the welds and these controls must be simple and inexpensive. Under laboratory controlled conditions good welds have been made at the rate of 600 per minute with the new control. Commercial results depend largely upon design of equipment and applications involved, he pointed out. "It is certain, however, that good welds will be made at the maximum rate only if each portion of the welding cycle is accurately and independently controlled," he concluded.

K. L. Hansen, Harnischfeger Corp., Milwaukee, in presenting a paper on "Interpretation of Oscillograms of Arc Welding Generators in Terms of Welding Performance," said that it has long been recognized that the transient performance of an arc welding generator greatly exceeds its static performance in importance but that this type of generator, unlike most others, supplies energy to a load in which conditions are continually changing, and the machine's ability to respond quickly to these rapid variations is obviously important.

Tests Not Satisfying

It is natural that specifications which have so far been formulated to cover tests for transient performance of welding generators should simulate as far as possible the conditions prevailing in the arc, he said. Present tests of welding generators for momentary current fluctuations and recovery usually leave much to be desired since tests have shown that a machine which meets specifications may be definitely inferior to one which does not, and vice versa. Mr. Hansen then went on to explain how proper interpretation of tests makes them decidedly more useful.

Two sessions also were devoted to electronics. The use of electron tubes in the industrial field has grown steadily for the past several years, finding their greatest application where other methods of control could not readily be used or were decidedly inferior. Speed control of direct-current motors by means of thyratrons is in direct competition with those using rheostats, vibrating contacts and other similar forms of field control.

G. W. Garman, General Electric Co., Schenectady, N. Y., discussed "Thyratron Control of Direct Current Motors" and explained that by means of the new thyratron circuits it is possible to hold constant motor speed, constant armature voltage or constant relative speed between the two systems. It also is possible to hold constant either an alternating or direct-current voltage which is dependent upon the speed or position of the armature of a direct-current motor.

The steel industry stands to gain through modernization of electric transportation equipment for the need for lower operating costs is forcing utilities to turn to lightweight vehicles which are constructed of the lighter-weight, high-tensile materials. Over 500 of the new P.C.C. or President's Conference Committee street cars now are in use in seven cities of the country and it is predicted that large numbers of them will be built and placed in service in many cities in which modernization programs are under way. Large scale replacement of heavy old-type street cars with light-weight trackless trolley buses also is anticipated in a number of cities. This type of bus has stimulated development of high-speed light-weight motors.

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Welding Instructions And Standards Issued

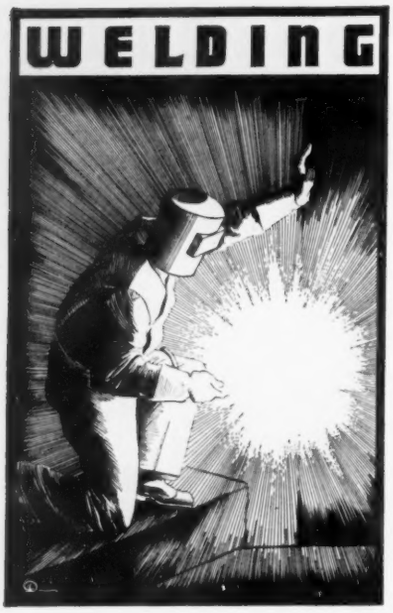
■ Primarily concerned with methods of showing welding on drawings by the American Welding Society's new symbol system, an 81-page booklet entitled "Welding Instructions and Standards—Part I" has been published by United States Steel Corp. Subsidiaries.

Among the subjects discussed in the new booklet are the symbols for fusion and resistance welding, specifications for individual welds, and a list of various types of welded joints. A useful feature of the booklet is a supplement wherein standard sections of welds, filler metal properties, workmanship and other subjects not directly connected with the section on welding symbols, are briefly treated so that Part I may be of service to those interested in welding.

Numerous illustrations showing welding technique and various welded products add to the value of the brochure. A typical form for welding drawings is also included, and an example is provided to show how much time and space are saved by the use of the new symbol system as against written instructions.

Lincoln Foundation Has Welding Films Available

■ A series of slide films on various arc welding subjects is now available for use by engineering society sections, technical clubs, trade schools, engineering colleges and other groups. Between 40 and 50 individual illustrations have been arranged to be shown as a series of slides. A typewritten explanation discussing the subjects in practical language accompanies each film. The films can be obtained from the James F. Lincoln Arc Welding Foundation, Cleveland. Subjects now covered include, "Arc Welded Construction of a Revolutionary Type of Industrial Building Which Entirely Ignores Roof Trusses", "The Shielded Arc Process of Electric Welding", "Changing From Cast to Welded Steel Construction", "Arc Welding Applied to Structural Work", "Construction of Oil, Gas and Water Pipe Lines by Electric Welding", "Surfacing" and "Automatic Welding".



By ROBERT E. KINKEAD

On this page the author, well-known consulting engineer in welding is given wide latitude in presenting his views. They do not necessarily coincide with those of the editors of STEEL

Welding Business Still A Large Field

■ Young Bob says he is not going to follow welding as a life's business; he is going in for machine design and industrial styling.

Perhaps his old man is responsible for his rejection of welding. Several years ago it seemed to us that welding might become stabilized like radio, aviation and other technical fields with young men being fitted into niches created by some one else and little opportunity for personal advancement beyond subordinate rank.

If that was our idea, it has been proved entirely wrong. Welding is still a young man's business. New ideas and new inventions can knock the props out from under the strongest organization in the field over night and the managing executives know it and are looking for the boys who can do it. Perhaps that is true in all technical fields and we only see it in the welding field because we happen to have specialized in it and known and worked with its people for twenty-five years.

But young Bob has to live his life and whatever looks good to him as a career is tremendously more important than the fact that his father thinks the welding field offers grand opportunities. People get the most out of themselves by doing the thing they like to do. In the technical fields nothing is ever finally settled. If life may be defined as a sense of becoming, then a technical career is life, for no matter how great the triumph today, tomorrow offers another job and new worlds to be conquered. It is that perpetual struggle which gives life significance. For one who has tasted its fruits, life may hold discouragement and tremendous triumph; it will never be dull. And over and above all is the sure knowledge that the salvation of the human race depends on scientific progress born of such struggles.

It will be some years before young Bob is ready to take off on his career. By that time perhaps some other young fellow will be knocking Bob's old man for a goal in the welding profession. Right now we feel that it will take a bit of knocking to do that; but then it has been done before and the story usually ends that way.

Plastics Will Be Welded

■ Prediction of the patriarch of Dearborn, as reported by Paul Gallico of International News Service, that material for automobile bodies will be grown on farms in the not distant future might interest the new owners of 25 million dollar strip mills.

The welding industry could be complacent on the grounds that when plastics have reached that stage, welding will be applied to the same degree that it is used in steel at the present time.

There is no reason why plastics cannot be welded as readily as steel when more usable plastic material is developed.

The present difficulty with applying plastic material to automobile bodies comes from the fact that nothing we know about can be raised and made into plastics with strength comparable to steel strip —and within gunshot of 3½c per pound. If such agricultural products could be raised, at least half the industrial population now living in cities could profitably return to the farms.

It seems more likely that, before steel is abandoned for automobile bodies, considerable improvement of the steel itself will take place. Nonferrous cladding in areas that are greatly deformed in the press operations would reduce breakage in the dies and, more important, prolong the service life, since these areas fail first by corrosion. Localized strengthening of steel offers the possibility of weight reduction and simplified pressing operations. The steel age in automobiles has not yet run its course.

Protects Paper Edges

■ **Useful machine is this sheet binder, product of Vertex Co., New York. It applies paper tape or plain or colored cellulose to straight or curved edges, preserving and protecting the borders of tracings, blue prints, photos, and other sheets subject to mutilation by handling**

Gas Prices Decreased

■ President C. D'W. Gibson of the International Acetylene association points out that the latest government figures (1935) indicate that the carbide and acetylene business of this country produced an annual shipping figure of 53,000 cars. The figure is probably doubled at the very least and more likely trebled if oxygen is added. Figures for the year 1937 will show a large increase. Prices of compressed gases continually decrease as wider use makes economies possible.

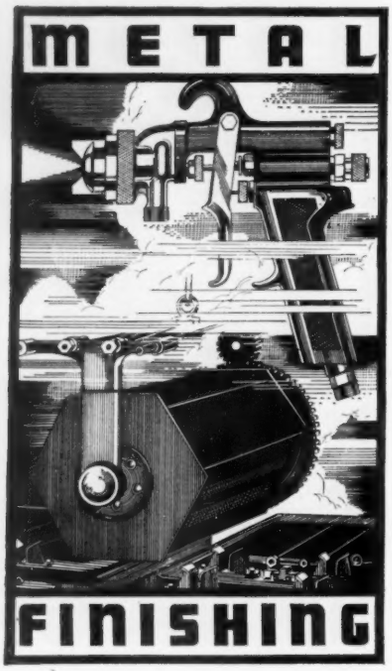
Whitey Sez:

"Open House" has been declared during 1938 at MAURATH, INC.—wherein the fundamentals of *better* arc-welding electrode manufacture will be exposed . . . Successive ads, starting with the raw materials and their exacting fabrication in my plant, through to their completed form, will endeavor to establish a better understanding of trade values—founded on *quality* rather than *price*.

For this educational task, I have assigned our genial host "Whitey, Jr.", who will personally conduct the tour.

MAURATH, INC. BUILDER OF BETTER WELDING ELECTRODES IN ALL ANALYSES

CLEVELAND



Steel Desks

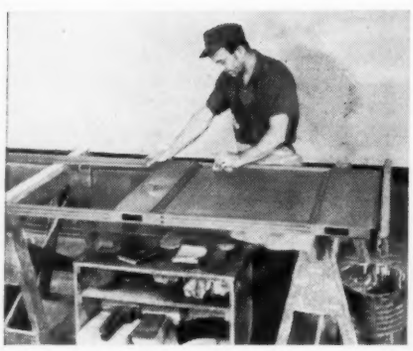
Modern metal office furniture by Art Metal Construction Co. requires durable, economical finishes that will not crack, peel or chip and can be washed with soap and water

■ FINISH of any steel product is a big factor in determining its market value. It has been estimated that the finish of certain products represents 60 per cent of their value to the ultimate user and it undoubtedly plays a large part in the sale of office equipment.

A high quality baked enamel finish is one of the factors contributing to wide acceptance of the new Airline desks recently introduced by Art Metal Construction Co., Jamestown, N. Y. Durable, attractive finishes also are an important element in the sale of other steel office equipment and metal partitions manufactured by this company.

The desk shown on next page incorporates modern design in that the top does not project over the sides or ends and the corners are smoothly rounded off. In addition, island bases centered under the pedestals support the desk, eliminate legs and provide more foot freedom for the occupant as well as facilitate cleaning.

To accompany this modern design, a new color, a light, pearl grey, was selected, as it was found to harmonize well with general office surroundings, to be pleasing in tone and to contribute to efficiency through diffusing rather than absorbing office light. Other finishes applied to steel used for tables, chairs, railings, partitions and similar equipment include straight grained mahogany, American walnut, light colored oak and a warm shade of olive that harmonizes with most interior trims. Other plain colors in addition to shades to match existing color schemes are furnished also.



Hand sanding section of steel partition prior to application of finish enamel coats

Section of steel partition is grained by hand to look like mahogany, an operation involving careful attention to detail

Study Finishing

Finishes and their application have received much study as it is essential that they be durable as well as economical, that they do not crack, peel or chip and that they be capable of easy restoration to their original luster by washing with ordinary soap and water. Finishes

Airline desk of streamline design made from steel sheets and finished in enamel

successfully meeting these requirements are obtained by a careful procedure.

Material received by the paint department first is thoroughly cleaned by submersion in a vat of benzine where oil, grease and dirt are washed off. After subsequent drying, the unit is carefully inspected to detect the presence of any rust spots or steel company stamp marks, the benzine bath not being able to remove these. Any rust spots found are removed with sandpaper and a chemical rust inhibitor then applied. Steel stamp marks are removed with alcohol and sandpaper.

Next the material is dipped in a tank of baking, dipping enamel and placed on a conveyor rack to drain off, after which it is rolled into an oven and given a 1-hour bake at 300 degrees Fahr. This dip coat is important, as it constitutes the base upon which subsequent finish coats are applied. It contains pigments to give hiding power and color, varnish to add strength and adhesive quality, and thinner to distribute and aid in draining. Pigments are mainly ochre with about 30 per cent iron, burnt sienna of about 70 per cent iron content, Prussian blue with 30 per cent iron, chrome yellow, black and white. Since the first two predominate, there is a high percentage of iron or ferric hydroxide in the dip which helps the finish to stand up in service for long periods of time.

Produce Durable Varnish

One factor partly responsible for the quality finish is the oil type varnish used. This is highly resistant to moisture and is made principally from China wood oil and specially treated Kauri gum. Chemically fused, these produce a strong and durable varnish.

After the initial baking operation, the surfaces are sanded down smooth by machine and by hand. They then are inspected and subsequently sprayed with finishing coat enamel designed to give a tough, hard and marproof surface. The material is baked again for 1 hour at 300 degrees Fahr. and is inspected after it has cooled. These are the steps employed to produce the standard olive F finish.

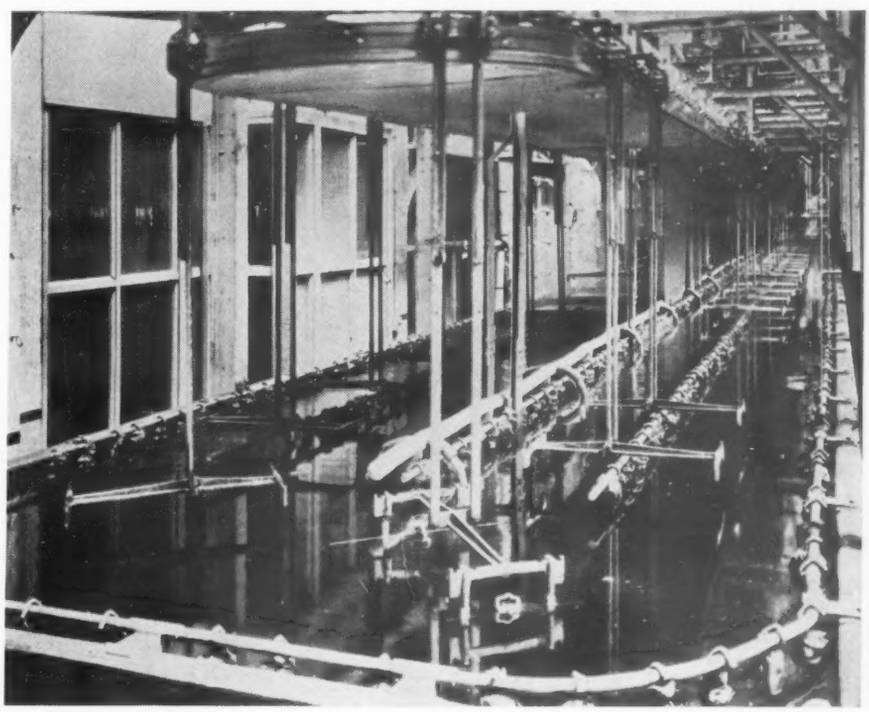
On pieces with a mahogany or walnut finish, a slightly different procedure with several additional operations is followed. After the sanding operation on the dip coat, the finished surfaces are given a ground coat and baked again for 1 hour at 300 degrees Fahr. or for 2 hours at 250 degrees Fahr. The ground coated surfaces then are sanded smooth and grained to look like mahogany or walnut, as the case may be. Graining is done by hand for the mahogany work and by process for the walnut. Photographically engraved plates are used to grain the walnut.

Following this, the grained work is baked again for 1 hour at 300 degrees Fahr, or for 2 hours at 250 degrees Fahr. and carefully scraped to remove any possible grit that may have been baked into the graining color. A spray coat of synthetic varnish then is applied and baked 1 hour at 300 degrees Fahr. or the work is given two coats of fast drying lacquer. Rubbing and polishing of finished surfaces constitute the final operations in both instances.

Based on experience gained during 50 years of finishing steel surfaces, the above procedure results in finishes not only economical in first cost but durable and practically immune to cracking, peeling or chipping.

In addition, the company is constantly on the alert for improved procedures in finishing, so that its finishes may keep pace with the modern design of its products.

Rubber Insures Continuous Service



■ This 70-foot steel tank, lined with Triflex rubber by Vulcalock process of B. F. Goodrich Co., Akron, O., was installed more than three years ago in the plant of a prominent Detroit automobile manufacturer. It has been used in connection with the Harshaw bright nickel plating process at operating temperatures of 140-150 degrees Fahr. Operation has been uniformly successful with no interruptions for tank repairs. No trace of "treeing" or "plating out" has been encountered on rubber surface. Solution is filtered continuously to prevent accumulation of sludge. Installation should interest platers because of its size and fact that it typifies good bright nickel plating practice

Hoist Manipulates Loads from Any Angle

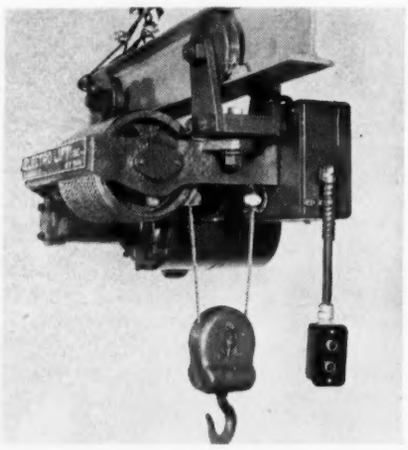
■ Electro Lift Inc., 30 Church street, New York, has introduced a rope guide hoist designed for side and end pulling or wherever loads cannot be brought directly under the hoist.

Hoist has a drum with deep grooving which completely submerges cable. It is fitted with a traveling guide having a finger which runs in the groove ahead of cable and holds cable in its proper groove. This eliminates hazard of crossed or piled up cables and increases cable life. Cable breakage is reduced particularly where loads are pulled at an angle to the vertical.

Unit is built in sizes of ¼ to 5 tons and has all speeds and ratings of standard hoists. It has a worm drive with worm and wheel running on tapered roller bearings, fully enclosed within gear case and running in a bath of oil.

Motor is equipped with ball bearings and is directly attached to hoist frame in compact arrangement. Entire load is carried on a rigid cast steel frame. Hoist has close headroom allowing hook to reach within a minimum distance of overhead track. Safety type hook block with guard completely encloses bottom sheave. Unit is built in both single and twin hook types, the latter for handling long loads.

Control may be either rope type or push button type; latter control accurately controls load by jogging. Top and bottom limit switches may also be provided to stop load in each direction of travel, preventing running of cable off the drum and providing accurate stop at bottom as well as at the top.

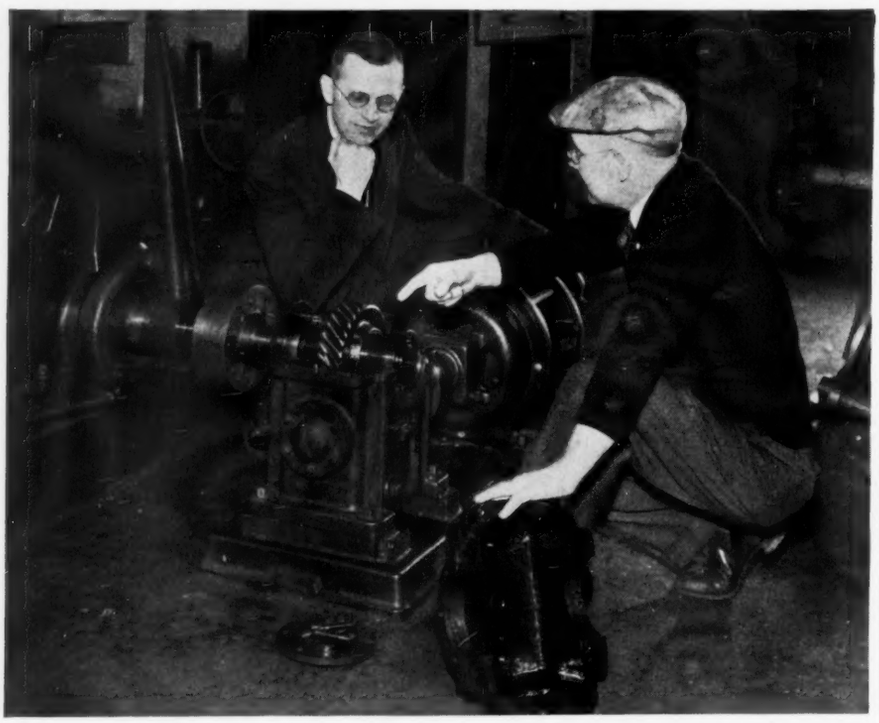


Above hoist is equipped with a guide to which is attached a finger that runs in the groove ahead of the cable keeping the cable in its proper track

Shear Line Improved

■ Niagara Machine & Tool Works, 637 Northland avenue, Buffalo, has placed on the market a line of power squaring shears which are built from 6 to 12 feet in length exclusively for flat shearing of 3/16-inch steel, and 14 and 11-foot lengths for 10-gage steel.

Shears have a triangular section



11 YEARS USE . . .
AND STILL GOING STRONG

"Look at this Horsburgh & Scott Speed Reducer . . . that's the first time we've had the cover off in 11 years of continuous use. Some service, I'd say . . . and it looks good for a lot more years."

Here's why such service is possible . . . Simple in design . . . Heavy, wide-face gears, accurately cut . . . Anti-friction bearings . . . Heavy dust-tight housing . . . Oversize shafts and bearings . . . Splash lubrication. You owe it to yourself to investigate these finest of speed reducers.

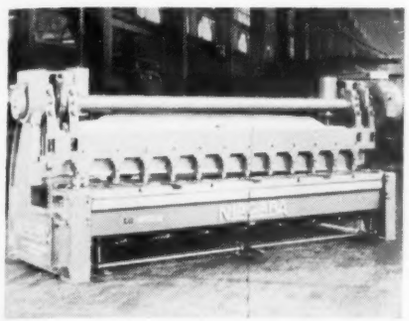
Send for complete catalog on Speed Reducers and Gears.

THE HORSBURGH & SCOTT CO.

GEARS AND SPEED REDUCERS

5112 HAMILTON AVENUE, CLEVELAND, OHIO, U. S. A.

crosshead with a low slope and enclosed drive mounted on antifriction bearings running in oil. A 14-point engagement sleeve clutch



This Niagara shear has an enclosed drive mounted on antifriction bearings running in oil and a 14-point engagement sleeve clutch with built - in single stroke mechanism

with built-in single stroke mechanism and alloy steel knives are among some of the other features of the line.

Lead Screw Is Improved

■ Sebastian Lathe Co., Cincinnati, is featuring chrome hardened threads and spline on the lead screw of its Gold Seal lathes which are claimed to insure longer wear and more accuracy.

Lead screw is supported by 5 bearings. The spline is milled below bottom of threads, therefore keys in apron bevel gears ride below and do not touch threads.

With this innovation a feed bar is not furnished as it is claimed that a larger screw can be used and the units of the aprons can be made much larger.

Adds Larger Model

■ Automatic Temperature Control Co., 34 East Logan street, Philadelphia, has added a second and larger Model C unit to its type 1 line of motor valve mechanisms which exerts an opening and closing force on the valve stem of 2000 pounds with 5 inches per minute movement and 2½-inch stroke.

Mechanism is designed to operate slip stem valves for heavier pressures and in larger sizes. Strokes up to 10 inches and speeds of 3 to 10 inches per minute are available with corresponding changes in power.

Power release positions the valve at definite open and closed points regardless of variable motor drift. Mechanism can be used either for full open and closed operation for automatic control with incremental movement proportional to some variable such as pressure or temperature.

Designs Electrode For Mild Steel Welding

■ Lincoln Electric Co., 12818 Coit road, Cleveland, has introduced a mild steel welding electrode designed for use with small alternating current transformer type arc welders which is claimed to simplify welding with this type of equipment.

The electrode, called Transweld, has a heavy extruded coating and a stable arc. Because of this arc, the electrode permits making welds in smooth well-shaped beads. It is suitable for making all types of welds in flat, horizontal or overhead positions. Electrode operates equally well with direct current of either straight or reversed polarity. Unit is made in 3/32, ⅛ and 5/32-inch sizes. The smaller size comes in 12-inch lengths, the other two in 14-inch.

Automatic Stapler Drives Staples Through Hoops

■ Burgess Co., Beaver Falls, Pa., has introduced a barrel and keg

Light Weight...Great Strength
Team up for Dependability!
THIS aluminum airplane propeller blade is forged by Aluminum Company of America on an Erie steam drop hammer... Like all Erie hammers, this modern aluminum propeller can be depended upon to do its gruelling job... Erie Hammers are known the world over for making excellent forgings... known for their sturdy construction... basically sound design... qualities reflecting lower costs in Erie-equipped forge shops ...500 forge shop men can turn to Erie with confidence for hammers designed and built by men who have been at it successfully for more than 35 years... Erie Builds Dependable Hammers.
ERIE
ERIE FOUNDRY COMPANY
ERIE, PENNSYLVANIA, U.S.A.
DETROIT 335 Curtis Bldg.
CHICAGO 549 Washington Blvd.
INDIANAPOLIS 335 Postal Station Bldg.
FRANCE Fenwick, S. A.
CANADA John Bertram & Sons Co. Ltd.
ENGLAND Burton, Griffiths & Co. Ltd.

stapler which drives nail-pointed staples completely through the hoop and stave, directly into the keg or barrel head with a downward motion of the handle.

Unit is so designed that it can be quickly removed from one stapling position to another. Stapler is fabricated of malleable iron. Operating handle together with tubular support rest and magazine containing staples are made of seamless steel tubing. Moving parts, main operating cam and staple driver, are made from hardened tool steel. Only one spring is employed in the whole unit and that is the long coil spring used for holding clips of staples in position. Handle is equipped with a rubber grip. Entire device with the exception of tool steel parts is electroplated with dull nickel.

Use of the stapler permits barrels and hoops to be reused and eliminates injuries at both shipping and receiving ends it is said. Unit may be used on any sized barrel or keg.

Drill Has Three Speeds

■ Stanley Electric Tool division, Stanley Works, New Britain, Conn., has introduced two electric drills, models 362 and 362H, for production work where light weight drills are required. Drills are available in three speeds for drilling in either metal, wood or other materials.

These 3/16-inch drills are 2¾ inches in diameter. This compact design allows close quarter drilling for use in the aviation industry, coach and bus construction, furniture factories, radio, refrigerator, electrical and automobile industries.

These Stanley electric drills are 2¾ inches in diameter and suitable for work in close quarters

Gears are heat-treated nickel steel. Motor shaft is supported on seal type ball bearings and housed in an aluminum shell. Chuck is mounted on ball bearings of the outer seal type with switch located in the rear end bell.

Model 362H has an automatic pistol type handle and fully enclosed double-pole switch mounted in handle. Motor is universal type and operates on direct-current or alternating-current, 60 cycles or less. Chuck is of the three-jaw type.

•

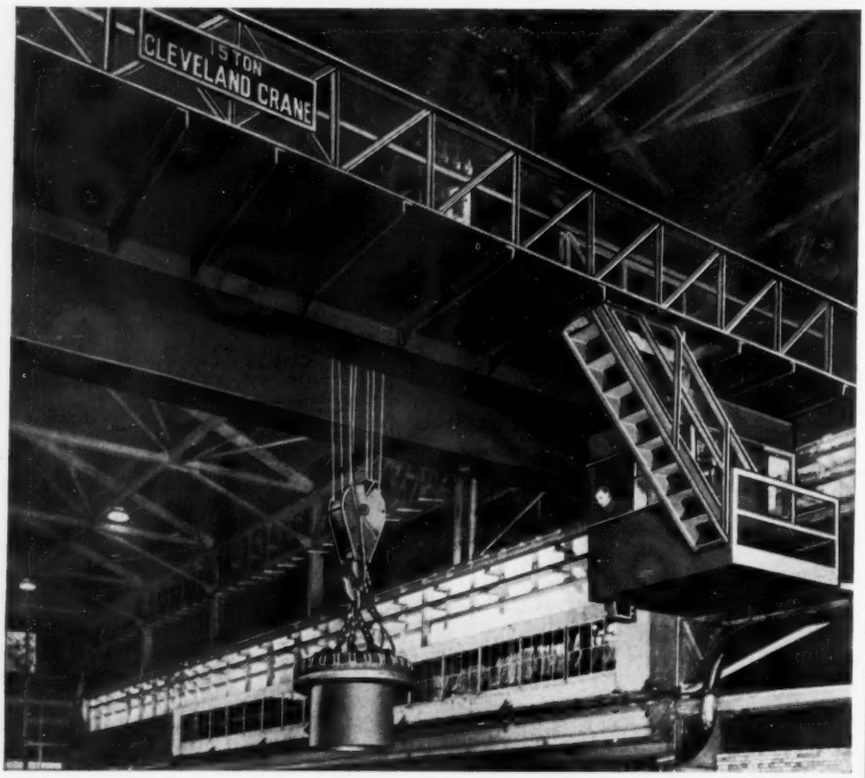
Four Greases Developed

■ Four types of greases for use on glass cocks in vacuum lines have been developed by Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

For vacuum line cocks which are subject to high temperatures, grease No. 6 is used. No. 7 was developed for high vacuum exhaust systems and will not readily release gases which would interfere with vacuum readings. For lubrication of rubber hose connections to metal tips of vacuum exhaust pumps, the company recommends grease No. 8. Stopcock grease No. 10 is a general laboratory grease. Its light consistency makes it more suitable for winter months and is particularly adapted to dessicator use.

CLEVELAND CRANES

All Welded for Every Industry



• A 15 ton 63' 6" span all welded Cleveland Crane in the new Strip Mill of the Jones and Laughlin Steel Corporation. This is one of many Cleveland Cranes in the various plants of this Company.

ALSO BUILDERS OF

CLEVELAND TRAMRAIL

THE CLEVELAND CRANE & ENGINEERING CO

1125 Depot St.

WICKLIFFE, OHIO

NEW YORK • DETROIT PITTSBURGH • CHICAGO

MATERIALS HANDLING EQUIPMENT

Trucking Confined to Raw Material, Finished Parts

(*Concluded from Page* 52)

swivel, which clamps and releases easily and quickly, permits turning the casting to the right, left, forward or backward to an angle of about 60 degrees from the vertical. The assembler turns the head to the position of easiest access for the men working on either side of the conveyor.

A variable-speed transmission in the drive to the conveyor provides adjustable speed according to the number of assemblers or the difficulty of the work on some of the larger units manufactured. A pit provided under the conveyor permits passage of the swivel heads on the return side.

A flexible shaft with a special clamp on the end drives each unit in test before it is removed from the assembly conveyor. The assembled units are taken directly from the conveyor to the close-by shipping platform and loaded into freight cars or in semi-trailer truck bodies for shipment to customers.

Shipping Platforms

■ In some manufacturing plants special pick-up stations are set aside to facilitate interdepartmental shipments of parts. In one such plant in Philadelphia, platforms are used in these areas to accumulate loads. On each is a sign which reads: "For Tractor-Trailer Material Only". The trailer trains make regularly scheduled trips, picking up the accumulation at each station.

Deaths from Handling

■ Overlifting continues to be one of the principal causes of death from industrial accidents in New York State. In 1937, a total of 1452 claims for benefits was filed by dependent survivors of workers who lost their lives while employed in various industries throughout that state. Of that total, 206 were claims as a result of fatalities from "handling objects", and 118 of this number were listed officially as due to "strains in handling". The remaining 88 deaths resulted from accidents in which the workers had been struck by objects handled, or in which handling of sharp objects and tools was the cause. Materials handling was in third place in the list of causes of fatal accidents, being exceeded only by vehicle accidents and by falls, which were credited with responsibility for the loss of 298 and 287 lives, respectively. The deaths as a result of handling accidents totaled 26 more than in 1936.

Enclose Storage Shelves

■ By storing bar stock in steel shelves completely enclosed except at the ends, one warehouse is said to have minimized the effects of dampness on its stock. Formerly this dampness was noticeable although an oil heating and blower system had been used to counteract it.

Many Cranes Overloaded

■ Large numbers of cranes in use are constantly overloaded, according to a materials handling engineer whose duties entail inspection trips to a wide variety of industrial plants. In a letter to STEEL, he states: "This is hazardous practice and, of course, increases cost of operation and maintenance. Lack of crane service also increases idle man hours. If crews must remain idle for cranes to serve them, this curtails production and increases manufacturing costs. It is essential, therefore, to make careful surveys of handling problems to see that materials are conveyed properly and speedily from one operation to another."

Higher Battery Capacity

■ In the January issue of *Storage Battery Power*, Edison Storage Battery Co., West Orange, N. J., states that "the trend toward higher battery capacities has been very general in all industrial truck operations during the past four to five years. This has been true not only of new trucks entering service, but also of trucks already in use in which the duty has increased beyond the capacity of the batteries originally installed. For all industrial truck batteries of the steel alkaline type shipped during 1937, the average capacity was approximately 40 per cent greater than in 1927."

Symposium Published

■ American Society for Testing Materials, 260 South Broad street, Philadelphia, has recently published a symposium entitled "Wear of Metals." Six technical papers comprising the symposium were presented at a meeting of the society in Philadelphia last April.

Subjects covered in the symposium include considerations involved in wear testing of metals, embodying definitions of wear and a bibliography of 137 references, wear testing of cast iron, wear of metals from the automotive viewpoint, a paper covering wear from power equipment viewpoint, wear of metals in the textile industry and a short paper on wear of metals from the railroad viewpoint. Discussion of the papers is included.

RECENT PUBLICATIONS OF MANUFACTURERS

Copies of any of the literature listed below may be obtained by writing directly to the companies involved, or by addressing STEEL, in care of Readers' Service Department, 1213 West Third Street, Cleveland

Furnaces—American Gas Furnace Co., Elizabeth, N. J., has issued a booklet containing illustrations, specifications and descriptions of heat treating furnaces and machines.

Electric Fans—Emerson Electric Mfg. Co., St. Louis, has issued a new 25-page catalog listing its whole line of electric fans. Illustrations, specifications and engineering data are included.

Electric Flow Meters—Bristol Co., Waterbury, Conn., has released bulletin 494 illustrating applications and outlining features of its new electric flow meter. Engineering data are included.

Dust—W. W. Sly Mfg. Co., Cleveland, has published a 7-page booklet describing "dust storms" in industrial plants. The booklet gives some idea on how much money is involved in damages caused by dust.

Resurfacing Materials—Flexrock Co., 800 North Delaware avenue, Philadelphia, has issued a folder on a new acid-resistant floor resurfacing material. Illustrations and specifications are included in the folder.

Air Conditioning—Trane Co., La Cross, Wis., has issued a publication entitled, "Weather Magic." The publication contains various specific instances where air conditioning and heating equipment was installed and proved successful.

Ropes—A. Leschen & Sons Rope Co., St. Louis, has published a booklet entitled, "The Hercules Record" which gives specific examples where wire ropes have proved efficient in various products. Illustrations are included.

Tools—George Gorton Machine Co., Racine, Wis., has issued an 8-page folder describing its new 3-dimensional pantographs for reproduction of intricate dies and molds. The folder contains illustrations, specifications and engineering data.

Boiler Regulators—Brown Instrument Co., division of Minneapolis-Honeywell Regulator Co., Philadelphia, has published catalog No. 5001 on the automatic boiler regulation system. Illustrations, specifications and technical data are embodied.

Compressors—Ingersoll-Rand Co., Phillipsburg, N. J., has issued a bulletin on small industrial compressors and vacuum pumps in its type 30 line which ranges in size from ¼ to 15 horsepower. Bulletin contains illustrations, specifications and engineering data.

Malleable Iron—Belle City Malleable Iron Co., Racine, Wis., has issued a folder embodying the description of Belmalloy castings and a discussion on Pearlitic malleable irons. Some engineering data are included.

Laboratory Equipment — Patterson Foundry & Machine Co., East Liverpool, O., has issued a folder describing different types of laboratory and pilot plant equipment. The folder contains illustrations and specifications.

Hose Installation — Manhattan Rubber Mfg. Co., division of Raybestos-Manhattan, Passaic, N. J., has issued a 4-page illustrated bulletin showing many installations of hose in different industries and containing engineering data on types of construction.

Rubber Joints — United States Stoneware Co., Akron, O., has published bulletin 902 which embodies a description of Flexlock rubber joints. Bulletin contains engineering data, illustrations, specifications and graphs in reference to various installations.

Atmos-Gas—C. M. Kemp Mfg. Co., 405 East Oliver street, Baltimore, has published a bulletin describing Atmos-gas for bright annealing. Details of the industrial carburetor, heart of the gas producer, and different types of installations and engineering data are included.

Caterpillar Products—Caterpillar Tractor Co., Peoria, Ill., has issued a 2-color bulletin illustrating a variety of jobs, both agricultural and industrial, which are being done by Caterpillar products. A description of obstacles overcome in countries of different climates is included.

Separator Magnets—Electric Controller & Mfg. Co., Cleveland, has released bulletin 910 which describes separator magnets in addition to information on smaller circular magnets, rectangular magnets and other special magnets for handling tramp iron. Illustrations and engineering data are embodied.

Dust Collectors — Claude B. Schneible Co., 3951 Lawrence avenue, Chicago, has issued bulletin 110 describing its Multi-Wash dust collector and its application to dust suppression problems. Illustrations and engineering data are included with added information on other equipment.

Copper—Copper Development association, Thames house, Millbank, London, Eng., has issued a 136-page booklet entitled, "Copper in Cast Steel and Iron." The booklet deals exclusively with the influence of copper additions on the properties of cast steel and cast iron. Illustrations, graphs and engineering data are included.

Machines—Niagara Machine & Tool Works, 637 Northland avenue, Buffalo, has published booklet No. 106 embodying a presentation of the complete line of Niagara presses, shears, machines for shearing, blanking, drawing and forming sheet and plate metal. Booklet also contains illustrations and engineering data.

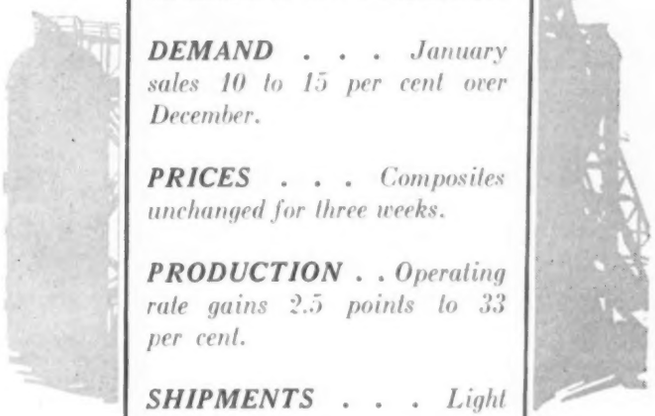
Machining — Continental Machine Specialties, 1301 South Washington avenue, Minneapolis, has published a 64-page booklet describing 25 ways to cut machining costs with an explanation based on case records showing the savings being made by contour machines as accomplished on Doall machines. Besides illustrations, the booklet contains drawings and engineering data.

Steel—A. Milne & Co., 741 Washington street, New York, has issued a catalog embodying a description of its tool and drill steels. The catalog may be used as a practical textbook for tool steel users based on the company's past experiences. It contains information on high speed and high alloy steels, alloy tool steels, carbon tool steels, mine and quarry steels and reference tables with illustrations, graphs and engineering data.

Monel, Nickel and Alloys—International Nickel Co., 67 Wall street, New York, has released bulletins T-13 and T-14. The former is entitled, "Nickel and Nickel-Base Alloys," and the latter, "Design and Construction of Heavy Equipment in Monel, Nickel and Inconel." Bulletin T-13 discusses the use in the design of corrosion-resistant machinery and equipment. The other bulletin elaborates on the design and construction of heavy equipment in Monel, Nickel and Inconel. Both publications include graphs, illustrations, specifications and technical information.

Steel Market Regains November Level

Prices Mark Time; Steel Exports High; Auto Output Lags



MARKET IN TABLOID

DEMAND . . . *January sales 10 to 15 per cent over December.*

PRICES . . . *Composites unchanged for three weeks.*

PRODUCTION . . *Operating rate gains 2.5 points to 33 per cent.*

SHIPMENTS . . . *Light*

■ STEEL buying in January is 10 to 15 per cent better than in December, in the experience of important producers. This is not a marked improvement, since the December level was low, but coupled with the slow but steady advance in production it indicates consumers are in need of material.

Appearance of buyers who have been out of the market for weeks indicates depletion of stocks by consumers. Purchases by these interests are only for current needs and there is no tendency to cover for the future.

The President has asked congress for an appropriation of $6,080,000 for tools, dies and equipment for producing necessary army supplies, of which $5,000,000 would be spent in the fiscal year beginning next June. He also asks two additional battleships and two cruisers to be laid down during 1938.

Ship construction continues an important factor in the steel market, though requirements will be spread over a long period. In addition to the two Socony-Vacuum tankers and 12 maritime commission cargo ships on which bids will be opened this week, and 12 tankers for the Standard Oil Co. of New Jersey, requiring in all about 120,000 tons of plates, other work is appearing. The maritime commission has signed a subsidy agreement with an additional steamship company for construction of ten cargo ships in five years, four to be started this year. The Union Oil Co. of California will take bids on a tanker in February and on two others later. The navy program promises to give considerable tonnage and some is being placed currently, 13,696 tons of armor plate being divided between three producers last week.

Scattered buying by railroads indicates need for rails, rolling stock and repairs and its small volume shows lack of financial ability to cover full needs. Sentiment is that a decision on the rate advance request will come soon and that it will be favorable. This is relied on to cause an immediate increase in buying of rails and cars, programs for which have been formulated long since, but held up until funds are available.

Steel production last week reached 33 per cent of capacity, the highest since the week of Nov. 20. This was an increase of 2.5 points over the preceding week. A gain of 4 points at Pittsburgh was the most important change, a number of centers maintaining their rate unchanged, while declines were slight in others. Pittsburgh advanced 4 points to 30 per cent, Cleveland 5 points to 31 and Cincinnati 8 points to 40. Chicago receded half a point to 27 per cent, Youngstown 1 point to 27, Wheeling 5 points to 46 and Buffalo 4.5 points to 18.5. There was no change at Detroit at 52, St. Louis at 21, New England at 20, Birmingham at 60 and Eastern Pennsylvania at 31. In most centers indications were for a further increase for this week.

Steel exports in December continued the high rate of earlier months, with 306,647 gross tons of manufactures and semimanufactures and 318,771 tons of scrap. Because of smaller shipments in some higher-priced materials the value for December was slightly under that of November. Tin plate exports declined from 52,795 tons in November to 31,364 in December, accounting for part of the loss in value. Japan took less than 10,000 tons of scrap, the smallest tonnage of any important scrap-importing country.

Automobile assemblies last week slumped to 59,365, compared with 65,418 the week before. General Motors produced 21,475, against 21,920 in the previous period; Chrysler dropped to 5950 from 11,800; Ford held steady at 22,765; independents assembled 9175, compared with 8933 the preceding week. Outlook is for restricted production through February.

The waiting position of the market is indicated by the fact that the three composites computed by STEEL showed no change last week. Scrap is in the dullest possible position and there is little movement except toward the coast for export loading. The composite of steelmaking scrap is stationary at $13.90 for the third consecutive week. The iron and steel composite at $38.97, is also unchanged for three weeks. The finished steel composite at $61.70 is steady at the level maintained for several months.

COMPOSITE MARKET AVERAGES

	Jan. 29	Jan. 22	Jan. 15	One Month Ago Dec., 1937	Three Months Ago Oct., 1937	One Year Ago Jan., 1937	Five Years Ago Jan., 1933
Iron and Steel	$38.97	$38.97	$38.97	$38.88	$39.59	$36.55	$28.17
Finished Steel	61.70	61.70	61.70	61.70	61.70	55.80	46.13
Steelworks Scrap..	13.90	13.90	13.90	13.24	15.93	18.12	6.23

Iron and Steel Composite:—Pig iron, scrap, billets, sheet bars, wire rods, tin plate, wire, sheets, plates, shapes, bars, black pipe, rails, alloy steel, hot strip, and cast iron pipe at representative centers. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Heavy melting steel and compressed sheets.

COMPARISON OF PRICES

Representative Market Figures for Current Week; Average for Last Month, Three Months and One Year Ago

Finished Material

	Jan. 29, 1938	Dec. 1937	Oct. 1937	Jan. 1937
Steel bars, Pittsburgh	2.45c	2.45c	2.45c	2.20c
Steel bars, Chicago	2.50	2.50	2.50	2.25
Steel bars, Philadelphia	2.74	2.75	2.74	2.49
Iron bars, Terre Haute, Ind.	2.35	2.35	2.35	2.10
Shapes, Pittsburgh	2.25	2.25	2.25	2.05
Shapes, Philadelphia	2.45½	2.46½	2.45½	2.25½
Shapes, Chicago	2.30	2.30	2.30	2.10
Tank plates, Pittsburgh	2.25	2.25	2.25	2.05
Tank plates, Philadelphia	2.43½	2.44½	2.43½	2.23½
Tank plates, Chicago	2.30	2.30	2.30	2.10
Sheets, No. 10, hot rolled, Pitts.	2.40	2.40	2.40	2.15
Sheets, No. 24, hot ann., Pitts.	3.15	3.15	3.15	2.80
Sheets, No. 24, galv., Pitts.	3.80	3.80	3.80	3.40
Sheets, No. 10, hot rolled, Gary	2.50	2.50	2.50	2.25
Sheets, No. 24, hot anneal., Gary	3.25	3.25	3.25	2.90
Sheets, No. 24, galvan., Gary	3.90	3.90	3.90	3.50
Plain wire, Pittsburgh	2.90	2.90	2.90	2.60
Tin plate, per base box, Pitts.	$5.35	$5.35	$5.35	$4.85
Wire nails, Pittsburgh	2.75	2.75	2.75	2.25

Semifinished Material

Sheet bars, open-hearth, Youngs.	$37.00	$37.00	$37.00	$34.00
Sheet bars, open-hearth, Pitts.	37.00	37.00	37.00	34.00
Billets, open-hearth, Pittsburgh	37.00	37.00	37.00	34.00
Wire rods, No. 5 to $\frac{9}{32}$-inch, Pitts.	47.00	47.00	47.00	43.00

Pig Iron

	Jan. 29, 1938	Dec. 1937	Oct. 1937	Jan. 1937
Bessemer, del. Pittsburgh	$25.26	$25.26	$25.26	$22.31
Basic, Valley	23.50	23.50	23.50	20.50
Basic, eastern del. East. Pa.	25.26	25.34	25.26	22.26
No. 2 fdy., del. Pittsburgh	25.21	25.21	25.21	22.21
No. 2 fdy., Chicago	24.00	24.00	24.00	21.00
Southern No. 2, Birmingham	20.38	20.38	20.38	17.38
Southern No. 2, del. Cincinnati	23.89	23.89	23.69	20.69
No. 2X eastern, del. Phila.	26.135	26.21½	26.13½	23.13½
Malleable, Valley	24.00	24.00	24.00	21.00
Malleable, Chicago	24.00	24.00	24.00	21.00
Lake Sup., charcoal, del. Chicago	30.24	30.24	30.04	26.54
Gray forge, del. Pittsburgh	24.17	24.17	24.17	21.17
Ferromanganese, del. Pittsburgh	107.49	107.49	107.29	84.79

Scrap

Heavy melting steel, Pittsburgh	$14.25	$13.40	$17.15	$18.95
Heavy melt. steel, No. 2, E. Pa.	14.00	13.13	14.01	16.40
Heavy melting steel, Chicago	13.25	12.50	13.95	18.25
Rails for rolling, Chicago	15.25	14.25	17.25	19.40
Railroad steel specialties, Chicago	15.75	15.75	19.35	19.65

Coke

Connellsville, furnace, ovens	$4.25	$4.37	$4.45	$4.00
Connellsville, foundry, ovens	5.25	5.25	5.25	4.25
Chicago, by-product foundry, del.	11.00	11.00	11.00	10.25

STEEL, IRON, RAW MATERIAL, FUEL AND METALS PRICES

Except when otherwise designated, prices are base, f.o.b. cars.

Sheet Steel

Prices Subject to Quantity Extras and deductions (Except Galvanized)

Hot Rolled No. 10, 24-48 in.

Pittsburgh	2.40c
Gary	2.50c
Chicago, delivered	2.53c
Detroit, del.	2.60c
New York, del.	2.74c
Philadelphia, del.	2.70c
Birmingham	2.55c
St. Louis, del.	2.63c
Granite City, Ill.	2.60c
Pac. base pts. f.o.b. cars	2.97½c

Hot Rolled Annealed No. 24

Pittsburgh	3.15c
Gary	3.25c
Chicago, delivered	3.28c
Detroit, delivered	3.35c
New York, delivered	3.49c
Philadelphia, del.	3.45c
Birmingham	3.30c
St. Louis, del.	3.38c
Granite City, Ill.	3.35c
Pac. base pts. f.o.b. cars	3.82½c

Galvanized No. 24

Pittsburgh	3.80c
Gary	3.90c
Chicago, delivered	3.93c
Philadelphia, del.	4.10c
New York, delivered	4.14c
Birmingham	3.95c
St. Louis, del.	4.03c
Granite City, Ill.	4.00c
Pac. base pts. f.o.b. cars	4.42½c

Tin Mill Black No. 28

Pittsburgh	3.30c
Gary	3.40c
St. Louis, delivered	3.53c
Granite City, Ill.	3.50c

Cold Rolled No. 10

Pittsburgh	3.10c
Gary	3.20c
Detroit, delivered	3.31c
Philadelphia, del.	3.40c
New York, del.	3.44c
St. Louis, del.	3.33c
Granite City, Ill.	3.30c
Pac. base pts. f.o.b. cars	3.72½c

Cold Rolled No. 20

Pittsburgh	3.55c
Gary	3.65c
Detroit, delivered	3.76c
Philadelphia, del	3.85c
New York, del.	3.89c
St. Louis	3.78c
Granite City, Ill.	3.75c

Enameling Sheets

Pittsburgh, No. 10	2.90c
Pittsburgh, No. 20	3.50c
Gary, No. 10	3.00c
Gary, No. 20	3.60c
St. Louis, No. 10	3.13c
St. Louis, No. 20	3.73c

Tin and Terne Plate

Gary base, 10 cents higher

Tin plate, coke (base box) Pittsburgh	$5.35
Waste-waste, 2.80c; strip	2.50c
Long ternes, No. 24, unassorted, Pitts.	4.10c

Corrosion and Heat-Resistant Alloys

Pittsburgh base, cents per lb.

Chrome-Nickel

	No. 302	No. 304
Bars	24.00	25.00
Plates	27.00	29.00
Sheets	34.00	36.00
Hot strip	21.50	23.50
Cold strip	28.00	30.00

Straight Chromes

	No. 410	No. 430	No. 442	No. 446
Bars	18.50	19.00	22.50	27.50
Plates	21.50	22.00	25.50	30.50
Sheets	26.50	29.00	32.50	36.50
Hot strip	17.00	17.50	23.00	28.00
Cold stp.	22.00	22.50	28.50	36.50

Steel Plate

Pittsburgh	2.25c
New York, del.	2.54c
Philadelphia, del.	2.44½c
Boston, delivered	2.66c
Buffalo, delivered	2.49½c
Chicago or Gary	2.30c
Cleveland, del.	2.45½c
Birmingham	2.40c
Coatesville, base	2.35c
Sparrows Pt., base	2.35c
Pacific basing points, f.o.b. cars	2.82½c
St. Louis, delivered	2.52c

Structural Shapes

Pittsburgh	2.25c
Philadelphia, del.	2.46½c
New York, del.	2.51¼c
Boston, delivered	2.64½c
Bethlehem	2.35c
Chicago	2.30c
Cleveland, del.	2.46c
Buffalo	2.35c
Gulf Ports	2.66c
Birmingham	2.40c
Pacific coast basing pts., f.o.b. cars	2.82½c
St. Louis, del.	2.52c

Bars

Soft Steel

(Base, 3 to 25 tons)

Pittsburgh	2.45c
Chicago or Gary	2.50c
Duluth	2.60c
Birmingham	2.60c
Cleveland	2.50c
Buffalo	2.55c
Detroit, delivered	2.60c
Pacific coast basing pts., f.o.b. cars	3.02½c
Philadelphia, del.	2.75c
Boston, delivered	2.86c
New York, del.	2.79c

Rail Steel

To Manufacturing Trade

Pittsburgh	2.30c
Chicago or Gary	2.35c
Cleveland	2.35c
Moline, Ill.	2.35c
Buffalo	2.40c
Birmingham	2.45c

Iron

Terre Haute, Ind.	2.35c
Chicago	2.40c
Philadelphia	2.64c
Pittsburgh, refined	3.50-8.00c

Reinforcing

New billet, straight lengths, quoted by distributors

Pittsburgh	2.45c
Chicago, Gary, Buffalo, Cleve., Birm., Young.	2.50c
Gulf ports	2.85c
Pacific coast ports, f.o.b. car docks	2.95c
Philadelphia, del.	2.75c

Rail steel, straight lengths, quoted by distributors

Pittsburgh	2.30c
Chicago, Buffalo, Cleveland, Birm., Young.	2.35c
Gulf ports	2.80c

Wire Products

Prices apply to mixed carloads, base; less carloads subject to quantity extras.

Base Pitts.-Cleve. 100 lb. keg.

Standard wire nails	$2.75
Cement coated nails	$2.75

(Per pound)

Polished staples	3.45c
Galv. fence staples	3.70c
Barbed wire, galv.	3.40c
Annealed fence wire	3.15c
Galv. fence wire	3.55c
Woven wire fencing (base C. L. column)	74
Single loop bale ties, (base C. L. column)	63

To Manufacturing Trade

Plain wire, 6-9 ga.	2.90c
Galvanized wire	2.95c
Anderson, Ind. (merchant products only) and Chicago up $1; Duluth and Worcester up $2; Birmingham up $3.	
Spring wire, Pitts. or Cleveland	3.50c
Do., Chicago up $1, Worc. $2.	

Cold-Finished Carbon Bars, Shafting

Pittsburgh	2.90c
Chicago	2.95c
Gary, Ind.	2.95c
Detroit	2.95c
Cleveland	2.95c
Buffalo	3.00c

Subject to quantity deductions and extras. List dated Aug. 26, 1935; revised Oct. 1, 1936.

Alloy Steel Bars (Hot)

(*Base, 3 to 25 tons*)

Pittsburgh, Buffalo, Chicago, Massillon, Canton, Bethlehem 3.00c

Alloy	S.A.E.	Diff.	S.A.E.	Alloy Diff.
2000	0.35	3100	0.70	
2100	0.75	3200	1.35	
2300	1.55	3300	3.80	
2500	2.25	3400	3.20	
4100	0.15 to 0.25 Mo.		0.55	
4600	0.20 to 0.30 Mo. 1.50-2.00 Ni.		1.10	
5100	0.80-1.10 Cr.		0.45	
5100	Cr. spring		0.15	
6100	bars		1.20	
6100	spring		0.85	
Cr. N., Van.			1.50	
Carbon Van.			0.85	
9200	spring flats		0.15	
9200	spring rounds, squares		0.40	

Piling

Pittsburgh	2.60c
Chicago, Buffalo	2.70c

Strip and Hoops

(Base, hot-rolled, 25-1 ton)
(Base, cold-rolled, 25-3 tons)

Hot strip to 23/8-in.	
Pittsburgh	2.40c
Chicago or Gary	2.50c
Birmingham base	2.55c
Detroit, del.	2.61c
Philadelphia, del.	2.70c
New York, del.	2.74c
Cooperage hoop,	
Pittsburgh	2.50c
Chicago	2.60c
Cold strip, 0.25 carbon and under, Pittsburgh, Cleveland	3.20c
Detroit, del.	3.41c
Worcester, Mass.	3.40c

Carbon	Cleve. Pitts.	Worcester, Mass.
0.26—0.50	3.20c	4.30c
0.51—0.75	4.45c	4.65c
0.76—1.00	6.30c	6.50c
Over 1.00	8.50c	8.70c

Rails, Track Material

(Gross Tons)

Standard rails, mill	$42.50
Relay rails, Pittsburgh 20—100 lbs.	32.50-35.50
Light rails, billet qual., Pittsburgh, Chicago	$43.00
Do., rerolling quality	42.00
Angle bars, billet, Gary, Pittsburgh, So. Chicago	2.80c
Do., axle steel	2.35c
Spikes, R. R. base	3.15c
Track bolts, base	4.35c
Tie plate, base	$46.00

Base, light rails 25 to 60 lbs.; 20 lbs. up $2; 16 lbs. up $4; 12 lbs. up $8; 8 lbs. up $10. Base railroad spikes 200 kegs or more; base plates 20 tons.

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chicago. Discounts to legitimate trade as per Dec. 1, 1932, lists:

Carriage and Machine

½ x 6 and smaller	65-5 off
Do. larger, to 1-in.	60-10 off
Do. 1⅛ and 1¼-in.	60-5 off
Tire bolts	50 off

Plow Bolts

All sizes	65-5 off

Stove Bolts

In packages with nuts attached 70 off; in packages with nuts separate 70-10 off; in bulk 80 off on 15,000 of 3-inch and shorter, or 5000 over 3-inch.

Step bolts	50-10-5 off
Elevator bolts	50-10-5 off

Nuts

S. A. E. semifinished hex.:	
½ to 1⅛-inch	60-10 off
Do., 9/16 to 1-inch	60-5 off
Do., over 1-inch	60 off

Hexagon Cap Screws

Milled	50-10 off
Upset, 1-in., smaller	60 off

Square Head Set Screws

Upset, 1-in., smaller	75 off
Headless set screws	75 off

Rivets, Wrought Washers

Structural, Pittsburgh, Cleveland	3.60c
Structural, Chicago	3.70c
⅞-inch and smaller, Pitts., Chi., Cleve.	65-5 off
Wrought washers, Pitts., Chi., Phila. to jobbers and large nut, bolt mfrs. l.c.l. $5.40; c.l. $5.75	off

Cut Nails

Cut nails, C. L. Pitts. (10% disc. on all extras)	$3.60
Do., less carloads, 5 kegs or more, no discount on any extras	$3.90
Do., under 5 kegs no disc. on any extras	$4.05

Welded Iron, Steel Pipe

Base discounts on steel pipe, Pitts, Lorain, O., to consumers in carloads. Gary, Ind., 2 points less. Chicago, del. 2½ less. Wrought pipe, Pittsburgh.

Butt Weld

Steel

In.	Blk.	Galv.
½	59½	49
¾	62½	53
1—3	64½	55½

Iron

¾	26	8
1—1¼	30	14
1½	34	16½
2	33½	16

Lap Weld

Steel

2	57	47½
2½—3	60	50½
3½—6	62	52½
7 and 8	61	50½
9 and 10	60½	50

Iron

2	26½	10
2½—3½	27½	12½
4	29½	16
4½—8	28½	15
9—12	24½	10

Line Pipe

Steel

1 to 3, butt weld	63½
2, lap weld	56
2½ to 3, lap weld	59
3½ to 6, lap weld	61
7 and 8, lap weld	60
10-inch, lap weld	59½
12-inch, lap weld	58½

Butt Weld

Iron

	Blk.	Galv.
¾	25	7
1 and 1¼	29	13
1½	33	15½
2	32½	15

Lap Weld

1½	23½	7
2	25½	9
2½ to 3½	26½	11½
4	28½	15
4½ to 8	27½	14
9 to 12	23½	9

Boiler Tubes

Carloads minimum wall seamless steel boiler tubes, cut lengths 4 to 24 feet, f.o.b. Pittsburgh, base price per 100 feet subject to usual extras.

Lap Weld

Sizes	Steel	Charcoal Iron
1½" OD x 13 Ga.	$10.45	$23.71
1¾" OD x 13 Ga.	11.89	22.93
2" OD x 13 Ga.	13.31	19.35
2" OD x 11 Ga.	15.49	23.36
2¼" OD x 13 Ga.	14.82	21.68
2¼" OD x 11 Ga.	17.38	26.02
2½" OD x 12 Ga.	17.82	26.57
2¾" OD x 12 Ga.	18.86	29.00
3" OD x 12 Ga.	19.73	31.36
3½" OD x 11 Ga.	24.89	39.81
4" OD x 10 Ga.	30.81	49.90
5" OD x 9 Ga.	47.57	73.93
6" OD x 7 Ga.	73.25	....

Seamless

	Hot Rolled	Cold Drawn
1" OD x 13 Ga.	$ 8.41	$ 9.46
1¼" OD x 13 Ga.	9.96	11.21
1½" OD x 13 Ga.	11.00	12.38
1¾" OD x 13 Ga.	12.51	14.09
2"OD x 13 Ga.	14.02	15.78
2¼" OD x 13 Ga.	15.63	17.60
2¼" OD x 12 Ga.	17.21	19.37
2½" OD x 12 Ga.	18.85	21.22
2¾" OD x 12 Ga.	19.98	22.49
3" OD x 12 Ga.	20.97	23.60
4½" OD x 10 Ga.	40.15	45.19
3½" OD x 11 Ga.	26.47	29.79
4" OD x 10 Ga.	32.83	36.94
5" OD x 9 Ga.	50.38	56.71
6" OD x 7 Ga.	77.35	87.07

Cast Iron Water Pipe

Class B Pipe—Per Net Ton

6-in. & over, Birm.	$46.00-47.00
4-in., Birmingham	49.00-50.00
4-in., Chicago	57.20-58.20
6 to 24-in., Chicago	54.20-55.20
6-in. & over, east fdy.	50.00
Do., 4-in.	53.00

Class A Pipe $3 over Class B
Stnd. fitgs., Birm., base $100.00

Semifinished Steel

Billets and Blooms

4 x 4-*inch base; gross ton*

Pitts., Chi., Cleve., Buffalo, Young., Birm.	$37.00
Philadelphia	42.30
Duluth	39.00

Forging Billets

6 x 6 *to* 9 x 9-*in., base*

Pitts., Chicago, Buffalo	43.00
Forging, Duluth	45.00

Sheet Bars

Pitts., Cleve., Young Sparrows Point	37.00

Slabs

Pitts., Chicago, Cleveland, Youngstown	37.00

Wire Rods

Pitts., Cleve., No. 5 to 9/32-inch incl.	47.00
Do., over 9/32 to 11/64-inch incl.	52.00

Chicago up $1; Worcester up $2.

Skelp

Pitts., Chi., Young., Buff., Coatesville, Sparrows Pt.	2.10c

Coke

Price Per Net Ton

Beehive Ovens

Connellsville, fur.	$4.00- 4.50
Connellsville, fdry.	5.00- 5.50
Connell. prem. fdry	5.75- 6.25
New River fdry.	6.50- 6.75
Wise county fdry	5.75- 6.00
Wise county fur.	4.75- 5.00

By-Product Foundry

Newark, N. J., del.	10.88-11.35
Chi., ov., outside del.	10.25
Chicago, del.	11.00
Milwaukee, ovens	11.00
New England, del.	12.50
St. Louis, del.	11.00-11.50
Birmingham, ovens	7.50
Indianapolis, del.	10.50
Cincinnati, del.	10.50
Cleveland, del.	11.05
Buffalo, del.	10.50
Detroit, del.	11.10
Philadelphia, del.	10.63

Coke By-Products

Spot, gal. Producers' Plants

Pure and 90% benzol	16.00c
Toluol	30.00c
Solvent naphtha	30.00c
Industrial xylol	30.00c

Per lb. f.o.b. Frankford and St. Louis

Phenol (200 lb. drums)	16.25c
do. (450 lbs.)	15.25c

Eastern Plants, per lb.

Naphthalene flakes and balls, in bbls. to jobbers	7.25c
Per ton, bulk, f.o.b. oven or port	
Sulphate of ammonia	$29.50

Pig Iron

Delivered prices include switching charges only as noted. No. 2 foundry is 1.75-2.25 sil.; 25c diff. for each 0.25 sil. above 2.25c; 50c diff. below 1.75 sil. Gross tons.

Basing Points:	No. 2 Fdry.	Malleable	Basic	Bessemer
Bethlehem, Pa.	$25.00	$25.50	$23.50	$26.00
Birdsboro, Pa	25.00	25.50	24.50	26.00
Birmingham, Ala.‡	20.38	....	19.38	25.00
Buffalo	24.00	24.50	23.00	25.00
Chicago	24.00	24.00	23.50	24.50
Cleveland	24.00	24.00	23.50	24.50
Detroit	24.00	24.00	23.50	24.50
Duluth	24.50	24.50	....	25.00
Erie, Pa.	24.00	24.50	23.50	25.00
Everett, Mass.	25.75	26.25	25.25	26.75
Granite City, Ill.	24.00	24.00	23.50	24.50
Hamilton, O.	24.00	24.00	23.50	....
Neville Island, Pa.	24.00	24.00	23.50	24.50
Provo, Utah	22.00	....	....	....
Sharpsville, Pa.	24.00	24.00	23.50	24.50
Sparrow's Point, Md.	25.00	....	24.50	....
Swedeland, Pa.	25.00	25.50	24.50	26.00
Toledo, O.	24.00	24.00	23.50	24.50
Youngstown, O.	24.00	24.00	23.50	24.50

‡Subject to 38 cents deduction for 0.70 per cent phosphorus or higher.

Delivered from Basing Points:				
Akron, O., from Cleveland	25.39	25.39	24.89	25.89
Baltimore from Birmingham	25.78	....	24.66	....
Boston from Birmingham	26.57	....	26.07	....
Boston from Everett, Mass.	26.30	26.80	25.80	27.30
Boston from Buffalo	26.45	26.95	25.95	27.45
Brooklyn, N. Y., from Bethlehem	27.47	27.97	....	....
Brooklyn, N. Y., from Bmghm.	27.25	....	....	....
Canton, O., fom Cleveland	25.39	25.39	24.89	25.89
Chicago from Birmingham	24.42	....	24.30	....
Cincinnati from Hamilton, O.	24.27	25.11	24.61	....
Cincinnati from Birmingham	23.89	....	22.89	....
Cleveland from Birmingham	24.32	....	23.82	....
Mansfield, O., from Toledo, O.	25.94	25.94	25.44	25.44
Milwaukee from Chicago	25.10	25.10	24.60	25.10
Muskegon, Mich., from Chicago, Toledo or Detroit	27.10	27.10	26.60	27.60
Newark, N. J., from Birmingham	26.21	....	....	....
Newark, N. J., from Bethlehem	26.53	27.03	....	....
Philadelphia from Birmingham	25.58	....	25.46	....
Philadelphia from Swedeland, Pa.	25.84	26.34	25.34	....
Pittsburgh district from Neville Island	∫ Neville, base plus 63c, 76c, ⌇ and $1.13 switch'g charges			
Saginaw, Mich., from Detroit	26.45	26.45	25.95	25.95
St. Louis, northern	24.55	24.55	24.05	....
St. Louis from Birmingham	†24.12	....	23.82	....
St. Paul from Duluth	26.08	26.08	....	26.58

†Over 0.70 phos.

Low Phos.

Basing Points: Birdsboro and Steelton, Pa., and Standish, N. Y., $28.50, Phila. base, standard and copper bearing, $29.63.

Gray Forge		Charcoal	
Valley furnace	$23.50	Lake Superior fur.	$27.00
Pitts. dist. fur.	23.50	do., del. Chicago	30.24
		Lyles, Tenn.	26.50

Silvery†

Jackson county, O., base: 6-6.50 per cent $28.50; 6.51-7—$29.00; 7-7.50—$29.50; 7.51-8—$30.00; 8-8.50—$30.50; 8.51-9—$31.00; 9-9.50—$31.50; Buffalo $1.25 higher.

Bessemer Ferrosilicon†

Jackson county, O., base: Prices are the same as for silveries, plus $1 a ton.

†The lower all-rail delivered price from Jackson, O., or Buffalo is quoted with freight allowed.

Manganese differentials in silvery iron and ferrosilicon, 2 to 3%, $1 per ton add. Each unit over 3%, add $1 per ton.

Refractories

Per 1000 f.o.b. Works, Net Prices

Fire Clay Brick

Super Quality

Pa., Mo., Ky.	$64.60

First Quality

Pa., Ill., Md., Mo., Ky.	51.30
Alabama, Georgia	51.30
New Jersey	56.00

Second Quality

Pa., Ill., Ky., Md., Mo.	46.55
Georgia, Alabama	41.80
New Jersey	51.00

Ohio

First quality	43.70
Intermediate	39.90
Second quality	35.15

Malleable Bung Brick

All bases	$59.85

Silica Brick

Pennsylvania	$51.30
Joliet, E. Chicago	59.85
Birmingham, Ala.	51.30

Ladle Brick

(Pa., O., W. Va., Mo.)

Dry press	$30.00
Wire cut	$28.00

Magnesite

Imported dead - burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	$45.00
Domestic dead - burned grains, net ton f.o.b. Chester, Pa., and Baltimore bases (bags)	43.00

Base Brick

Net ton, f.o.b. Baltimore, Plymouth Meeting, Chester, Pa.

Chrome brick	$49.00
Chem. bonded chrome	49.00
Magnesite brick	69.00
Chem. bonded magnesite	59.00

Fluorspar, 85-5

Washed gravel, duty paid, tide, net ton	$23.50-24.00
Washed gravel, f.o.b. Ill., Ky., net ton, carloads, all rail	$20.00
Do., for barge	$22.00
No. 2 lump	22.00-23.00

Ferroalloys

Dollars, except Ferrochrome

Ferromanganese, 78-82%, tidewater, duty pd.	$102.50
Do., Baltimore, base	102.50
Do., del. Pittsburgh	107.49
Spiegeleisen, 19-21% dom. Palmerton, Pa., spot	33.00
Do., New Orleans	33.00
Do., 26-28%, Palmerton	39.00
Ferrosilicon, 50% freight allowed, c.l.	69.50
Do., ton lot	80.50
Do., 75 per cent	126.00
Spot, $5 a ton higher.	
Silicoman., 2½ carbon	106.50
2% carbon 111.50; 1%,	121.50
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. lb. del.	10.50
Ferrotungsten, stand., lb. con. del. cars	2.00-2.25
Ferrovanadium, 35 to 40% lb., cont.	2.70-2.90
Ferrotitanium, c. l., prod-plant, frt. all., net ton	142.50
Contract, ton lots	145.00
Spot, ton lots	150.00
Ferrophosphorus, per ton, c. l., 17-18% Rockdale, Tenn., basis, 18%, $3 unitage	58.50
Ferrophosphorus, electrolytic, per ton c. l., 23-26% f.o.b. Monsanto, Tenn., 24% $3 unitage	75.00
Ferromolybdenum, stand. 55-65%, lb. f.o.b. mill	0.95
Molybdate, lb. cont. f.o.b. mill	0.80
Technical molybdenum trioxide, 53 to 60% molybdenum, f. o. b. mill	0.80

Nonferrous

METAL PRICES OF THE WEEK

Spot unless otherwise specified. Cents per pound

	Copper: Electro, del. Conn.	Copper: Lake, del. Midwest	Copper: Casting, refinery	Straits Tin, New York: Spot	Straits Tin, New York: Futures	Lead New York N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 99%	Antimony American Spot, N. Y.	Nickel Cathodes
Jan. 22	10.25	10.62½	9.77½	41.12½	41.37½	4.90	4.75	5.00	20.00	13.75	35.00
Jan. 24	10.25	10.62½	9.77½	40.87½	41.12½	4.90	4.75	5.00	20.00	13.75	35.00
Jan. 25	10.25	10.62½	9.77½	41.00	41.25	4.90	4.75	5.00	20.00	13.75	35.00
Jan. 26	10.25	10.62½	9.77½	40.62½	40.87½	4.90	4.75	5.00	20.00	13.75	35.00
Jan. 27	10.25	10.62½	9.77½	40.37½	40.62½	4.90	4.75	5.00	20.00	13.75	35.00
Jan. 28	10.00	10.12½	9.52½	40.12½	40.37½	4.90	4.75	5.00	20.00	13.75	35.00

MILL PRODUCTS

F.o.b. mill base, cents per lb. except as specified. Copper brass products based on 10.00c *Conn. copper*

Sheets

*Yellow brass (high)	16.62½
*Copper, hot rolled	18.12½
Lead, cut to jobbers	8.25
Zinc, 100-lb. base	10.00

Tubes

*High, yellow brass	19.37½
*Seamless copper	18.62½

Rods

*High yellow brass	12.62½
*Copper, hot rolled	14.62½

Anodes

*Copper, untrimmed	15.37½

Wire

*Yellow brass (high)	16.62½

OLD METALS

Nom. Del. buying prices

No. 1 Composition Red Brass

*New York	6.10-6.12½
*Cleveland	6.50-6.75
*Chicago	6.00-6.25
St. Louis	5.50-5.75

Heavy Copper and Wire

*New York, No. 1	7.25-7.37½
*Cleveland, No. 1	7.25-7.50
*Chicago, No. 1	7.50-7.75
St. Louis	7.25-7.50

Composition Brass Borings

*New York	5.25-5.37½

Light Copper

*New York	5.25-5.37½
*Cleveland	5.50-5.75
*Chicago	5.75-6.00
St. Louis	5.00-5.25

Light Brass

*Cleveland	3.25-3.50
Chicago	4.00-4.12½
St. Louis	3.25-3.75

Lead

*New York	3.87½-4.00
*Cleveland	3.25-3.50
Chicago	3.75-3.87½
St. Louis	3.25-3.50

Zinc

New York	2.12½-2.25
*Cleveland	2.00-2.25
St. Louis	2.25-2.50

Aluminum

Borings, Cleveland	6.75-7.00
Mixed cast, Cleve.	9.75-10.00
*Clips, soft, Cleve.	12.50-12.75
Mixed cast, St. L.	9.50-10.00

SECONDARY METALS

Brass, ingot, 85-5-5-5, lcl	10.75
Stand. No. 12 alum.	17.00-17.50

WAREHOUSE STEEL PRICES

Base Prices in Cents Per Pound, Delivered Locally, Subject to Prevailing Differentials

	Soft Bars	Bands	Hoops	Plates ¼-In. & Over	Structural Shapes	Floor Plates	Sheets: Hot Rolled No. 10	Sheets: Hot Roll Ann. No. 24	Sheets: Galv. No. 24
Boston	4.20c	4.40c	5.40c	4.08c	4.07c	5.75c	4.15c	4.90c	5.10c
New York (Metropolitan)	4.12	4.32	4.32	4.00	3.97	5.60	4.07	4.50	5.00
Philadelphia	4.00	4.10	4.35	3.90	3.90	5.25	4.00	4.65	5.30
Baltimore	4.00	4.20	4.45	3.90	3.90	5.50	3.95	4.50	4.70
Buffalo	3.90	4.22	4.22	3.92	3.80	5.52	3.97	4.80	5.35
Pittsburgh	3.80	4.00	4.00	3.70	3.70	5.30	3.75	4.50	5.15
Cleveland	3.75	4.16	4.16	3.86	3.86	5.46	3.91	4.66	5.31
Detroit	3.935	4.185	4.185	3.95	3.95	5.55	3.935	4.685	5.40
Cincinnati	4.05	4.25	4.25	3.95	3.95	5.55	4.00	4.75	5.40
Chicago	3.85	4.10	4.10	3.75	3.75	5.35	3.85	4.60	5.25
Minneapolis	4.10	4.35	4.35	4.00	4.00	5.60	4.10	4.75	5.25
Milwaukee	3.96	4.21	4.21	3.86	3.86	5.46	3.96	4.71	5.36
St. Louis	4.09	4.34	4.34	3.99	3.99	5.59	4.09	4.84	5.49
Memphis	4.31	4.51	4.51	4.21	4.21	5.85	4.26	5.01	5.66
Chattanooga	4.21	4.41	4.41	4.11	4.11	5.91	4.16	4.06	4.66
New Orleans	4.10	4.65	4.65	4.00	4.00	5.95	4.25	4.75	5.15
Houston, Tex.	3.75	6.00	6.40	3.95	3.95	6.00	4.50	5.25	5.65
Seattle	4.45	4.95	4.95	4.25	4.25	6.00	4.50	5.35	5.90
Portland, Oreg.	4.00	4.50	6.50	4.00	4.25	5.70	4.20	5.15	5.90
Los Angeles	4.30	4.80	6.55	4.30	4.30	4.30	4.50	5.05	5.75
San Francisco	4.20	4.80	6.50	4.05	4.05	5.55	4.30	5.15	5.85

	Cold Rolled Strip	Cold Finished Bars	SAE Hot-rolled Bars (Unannealed): 1035-1050	2300 Series	3100 Series	4100 Series	6100 Series	SAE Cold Drawn Bars: 2300	3100
Boston	3.845c	4.65c	4.50c	7.97c	6.52c	6.27c	9.37c	8.97c	7.52c
New York	3.92	4.82	4.32	7.82	6.37	6.12	....	9.00	7.55
Philadelphia	3.88	4.53	4.25	....	....	....	....	....	....
Baltimore	....	4.50	4.15	....	....	....	....	....	....
Buffalo	3.79	4.35	4.10	7.60	6.15	5.90	8.00	8.60	8.15
Pittsburgh	....	4.15	3.95	7.70	6.25	8.50	9.10	8.70	7.25
Cleveland	3.60	4.30	3.95	7.78	6.33	6.33	8.18	8.60	7.15
Detroit	3.78	4.30	4.085	7.89	6.44	6.19	7.74	8.88	7.43
Cincinnati	....	4.50	4.07	7.91	6.46	6.21	9.31	8.92	7.47
Chicago	3.87	4.30	4.05	7.60	6.15	5.90	9.00	8.60	7.15
Minneapolis	....	4.77	4.25	7.95	6.50	8.97	9.57	9.17	7.72
Milwaukee	....	4.41	4.16	7.81	6.36	8.61	9.21	8.81	7.36
St. Louis	3.96	4.54	4.29	7.94	6.49	6.24	8.34	8.94	7.49
Memphis	....	4.80	....	....	....	....	....	....	....
Chattanooga	....	4.86	....	....	....	....	....	....	....
New Orleans	5.00	5.10	....	....	....	....	....	....	....
Houston	....	....	....	....	....	....	....	....	....
Seattle	....	5.85	6.05	....	8.00	8.00	8.65	....	....
Portland, Oreg.	....	5.85	5.85	9.00	8.00	7.85	8.70	....	....
Los Angeles	5.96	6.85	4.65	9.40	8.55	8.40	9.05	10.40	9.55
San Francisco	9.30	6.80	5.20	9.65	8.80	8.65	9.30	10.65	9.80

CURRENT IRON AND STEEL PRICES OF EUROPE

Dollars at Rates of Exchange, Jan. 27

Export Prices f. o. b. Port of Dispatch—

By Cable or Radio

	British gross tons U. K. ports £ s d	Continental Channel or North Sea ports, metric tons: Quoted in dollars at current value	**Quoted in gold pounds sterling £ s d
Foundry, 2.50-3.00 Si.	$30.00 6 0 0	$19.50	2 9 0
Basic bessemer	....	.....	.....
Hematite, Phos. .03-.05	36.25 7 5 0*	19.50	2 9 0
Billets	$39.38 7 17 6	$43.01	5 7 6
Wire rods, No. 5 gage	56.38 11 5 6	46.00	5 15 0
Standard rails	$50.63 10 2 6	$46.00	5 15 0
Merchant bars	2.62c 11 15 0	1.91c	5 5 0
Structural shapes	2.37c 10 12 6	1.76c	4 17 6
Plates, †¼ in. or 5 mm.	2.58c 11 11 3	2.22c	6 2 6
Sheets, black, 24 gage or 0.5 mm.	3.12c 14 0 0	2.81c	7 15 0°
Sheets, gal., 24 ga., corr.	3.74c 16 15 0	3.44c	9 10 0
Bands and strips	2.95c 13 5 0	2.09c to 2.17c	5 15 0 to 6 0 0
Plain wire, base	4.35c 19 10 0	2.27c to 2.42c	6 5 0 to 6 17 6
Galvanized wire, base	5.18c 23 5 0	2.90c to 3.18c	8 0 0 to 8 15 0
Wire nails, base	4.13c 18 10 0	2.71c to 2.90c	7 10 0 to 8 0 0
Tin plate, box 108 lbs.	$5.63 1 2 6	....	.....

British ferromanganese $102.50 delivered Atlantic seaboard, duty-paid.

Domestic Prices at Works or Furnace—

Last Reported

	£ s d	French Francs		Belgian Francs		Reich Marks
Fdy. pig iron, Si. 2.5	$27.25 5 9 0(a)	$18.26	563½	$24.67	730	$25.38 63
Basic bess. pig iron	25.00 5 0 0(a)	.....	...	.....	..	28.00 (b)69.50
Furnace coke	8.75 1 15 0	6.12	189	7.27	215	7.66 19
Billets	39.38 7 17 6	27.22	840	32.45	960	38.88 96.50
Standard rails	2.26c 10 2 6	1.73c	1,150	2.06c	1,375	2.38c 132
Merchant bars	2.55c 11 9 0	1.62c	1,080	1.65c	1,100	1.98c 110
Structural shapes	2.46c 11 0 6	1.58c	1,055	1.65c	1,100	1.93c 107
Plates, †¼-in. or 5 mm.	2.61c 11 14 3	2.03c	1,350	2.06c	1,375	2.29c 127
Sheets, black	3.51c 15 15 0§	2.35c	1,565‡	2.36c	1,575‡	2.59c 144‡
Sheets, galv., corr., 24 ga. or 0.5 mm	4.13c 18 10 0	3.38c	2,250	4.50c	3,000	6.66c 370
Plain wire	4.35c 19 10 0	2.49c	1,660	2.48c	1,650	3.11c 173
Bands and strips	2.72c 12 4 0	1.82c	1,210	2.32c	1,550	2.29c 127

*Basic. †British ship-plates. Continental, bridge plates. §24 ga. ‡1 to 3 mm. basic price. British quotations are for basic open-hearth steel. Continent usually for basic-bessemer steel. (a) del. Middlesbrough. (b) hematite. °Close annealed.

**Gold pound sterling carries a premium of 64.4 per cent over paper sterling.

—The Market Week—

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated; † indicates brokers prices

HEAVY MELTING STEEL

Birmingham, No. 1	10.00
Birmingham, No. 2	9.00
Bos. dock No. 1 exp.	14.00-14.50
N. Eng. del. No. 1	13.50
Buffalo, No. 1	13.00-13.50
Buffalo, No. 2	11.00-11.50
Chicago, No. 1	13.00-13.50
Cleveland, No. 1	12.50-13.00
Cleveland, No. 2	11.50-12.00
Detroit, No. 1	9.50-10.00
Eastern Pa., No. 1	15.00
Eastern Pa., No. 2	14.00
Federal, Ill.	11.25-11.75
Granite City, R. R.	12.75-13.25
Granite City, No. 2	11.25-11.75
Los Angeles, No. 1	15.00-17.50
Los Angeles, No. 2	13.50-16.00
New York, No. 1	†11.00
N. Y. dock No. 1 exp.	13.50
Pitts., No. 1 (R. R.)	15.50-16.00
Pitts., No. 1 (dlr.)	14.00-14.50
Pittsburgh, No. 2	13.00-13.50
St. Louis, R. R.	12.75-13.25
St. Louis, No. 2	11.25-11.75
San Francisco, No. 1	14.00-15.00
Seattle, No. 1	8.00
Toronto, dlrs. No. 1	10.00
Valleys, No. 1	13.50-14.00

COMPRESSED SHEETS

Buffalo, dealers	11.00-11.50
Chicago, factory	11.50-12.00
Chicago, dealer	10.50-11.00
Cleveland	12.00-12.50
Detroit	10.25-10.75
E. Pa., new mat.	15.00
E. Pa., old mat.	10.50-11.00
Los Angeles	13.00-16.00
Pittsburgh	14.00-14.50
St. Louis	8.50- 9.00
Valleys	12.50-13.00

BUNDLED SHEETS

Buffalo	10.00-10.50
Cincinnati, del.	9.50-10.00
Cleveland	9.00- 9.50
Los Angeles	11.50-14.50
Pittsburgh	13.00-13.50
St. Louis	6.75- 7.00
Toronto, dealers	7.00

SHEET CLIPPINGS, LOOSE

Chicago	7.00- 7.50
Cincinnati	6.00- 6.50
Detroit	7.00- 7.50
† Los Angeles	4.00
St. Louis	5.50- 6.00

STEEL RAILS, SHORT

Birmingham	15.00
Buffalo	17.50-18.00
Chicago (3 ft.)	15.50-16.00
Chicago (2 ft.)	16.00-16.50
Cincinnati, del.	17.00-17.50
Detroit	14.50-15.00
Los Angeles	18.00-22.00
Pitts, 3 ft. and less	18.25-18.75
St. Louis, 2 ft. & less	15.00-15.50

STEEL RAILS, SCRAP

Boston district	†11.00
Buffalo	15.50-16.00
Chicago	13.00-13.50
Cleveland	16.50-17.00
Pittsburgh	15.75-16.25
St. Louis	13.50-14.00
Seattle	10.00

STOVE PLATE

Birmingham	8.00- 8.50
Boston, district	†8.25- 8.50
Buffalo	12.00-12.50
Chicago, net	8.50- 9.00
Cincinnati, dealers	5.50- 6.00
Detroit, net	8.50- 9.00
Eastern Pa.	13.00-13.50
New York, fdry.	†9.50-10.00
St. Louis	9.00- 9.50
Toronto, deal'rs, net	9.00

SPRINGS

Buffalo	17.50-18.00
Chicago, coil	17.00-17.50
Chicago, leaf	15.50-16.00
Eastern Pa.	18.00-18.50
Pittsburgh	18.25-18.75
St. Louis	15.25-15.75

ANGLE BARS—STEEL

Chicago	15.00-15.50
St. Louis	12.50-13.00

RAILROAD SPECIALTIES

Chicago	15.50-16.00

LOW PHOSPHORUS

Buffalo, crops	17.50-18.00
Cleveland, crops	19.50-20.50
Eastern Pa., crops	19.00-19.50
Pittsburgh, crops	18.00-18.50

FROGS, SWITCHES

Chicago	13.00-13.50
St. Louis, cut	13.50-14.00

SHOVELING STEEL

Federal, Ill.	11.25-11.75
Granite City, Ill.	11.25-11.75
Los Angeles (net)	16.00-18.00
Toronto, dealers	8.00

RAILROAD WROUGHT

Birmingham	11.00-11.50
Boston district	†9.00- 9.50
Chicago, No. 1 net	10.00-10.50
Cincinnati, No. 2	9.50-10.00
Eastern Pa., No. 1	15.50-16.00
St. Louis, No. 1	9.00- 9.50
St. Louis, No. 2	12.75-13.25
Toronto, No. 1 dlr.	16.00

SPECIFICATION PIPE

Eastern Pa.	14.00-14.50
New York	†9.00- 9.50

BUSHELING

Buffalo, No. 1	11.00-11.50
Chicago, No. 1	11.50-12.00
Cincin., No. 1, deal.	8.50- 9.00
Cincinnati, No. 2	3.00- 3.50
Cleveland, No. 2	8.50- 9.00
Detroit, No. 1, new	9.50-10.00
Valleys, new, No. 1	12.50-13.00
Toronto, dealers	7.00

MACHINE TURNINGS

Birmingham	6.00- 7.00
Buffalo	7.00- 7.50
Chicago	6.50- 7.00
Cincinnati, dealers	4.00- 4.50
Cleveland	7.50- 8.00
Detroit	5.25- 5.75
Eastern Pa.	8.50- 9.00
Los Angeles	4.00- 8.00
New York	†5.00- 5.50
Pittsburgh	8.00- 8.50
St. Louis	5.00- 5.50
Toronto, dealers	7.00
Valleys	9.50-10.00

BORINGS AND TURNINGS

For Blast Furnace Use

Boston district	†2.50
Buffalo	7.00- 7.50
Cincinnati, dealers	3.50- 4.00
Cleveland	9.00- 9.50
Detroit	6.25- 6.75
Eastern Pa.	8.00- 8.50
New York	†4.50- 5.00
Pittsburgh	7.00- 7.50
Toronto, dealers	7.50

CAST IRON BORINGS

Birmingham	6.00- 7.00
Boston dist. chem.	†7.50- 8.00
Bos. dist. for mills	†7.00- 7.50
Buffalo	7.00- 7.50
Chicago	6.50- 7.00
Cincinnati, dealers	3.50- 4.00
Cleveland	9.00- 9.50
Detroit	6.25- 6.75
E. Pa., chemical	13.50-14.00
New York	†4.50- 5.00
St. Louis	5.00- 5.50
Toronto, dealers	7.50

PIPE AND FLUES

Cincinnati, dealers	7.00- 7.50
Chicago, net	7.50- 8.00

RAILROAD GRATE BARS

Buffalo	9.50-10.00
Chicago, net	8.50- 9.00
Cincinnati	5.50- 6.00
Eastern Pa.	13.00-13.50
New York	†9.50-10.00
St. Louis	9.00- 9.50

FORGE FLASHINGS

Boston district	†7.00
Buffalo	11.00-11.50
Cleveland	11.00- 11.50
Detroit	9.00- 9.50
Los Angeles	9.00
Pittsburgh	12.75-13.25

FORGE SCRAP

Boston district	†6.50
Chicago, heavy	15.50-16.00

ARCH BARS, TRANSOMS

St. Louis	15.50-16.00

AXLE TURNINGS

Boston district	†7.50
Buffalo	12.00-12.50
Chicago, elec. fur.	11.50-12.00
Eastern Pa.	14.00-14.50
St. Louis	9.50-10.00
Toronto	8.00

STEEL CAR AXLES

Birmingham	16.00-17.00
Buffalo	17.00-17.50
Boston district	†14.00
Chicago, net	18.00-18.50
Eastern Pa.	21.50-22.00
St. Louis	18.50-19.00

SHAFTING

Boston district	†15.00
New York	†15.50-16.00
Eastern Pa.	19.00-19.50
St. Louis	13.00-13.50

CAR WHEELS

Birmingham	14.00-15.00
Boston dist., iron	†10.00
Buffalo, steel	17.00-17.50
Chicago, iron	15.00-15.50
Chicago rolled steel	15.00-15.50
Cincinnati, iron	15.00-15.50
Eastern Pa., iron	16.50-17.00
Eastern Pa., steel	18.00-18.50
Pittsburgh, iron	15.00-15.50
Pittsburgh, steel	18.25-18.75
St. Louis, iron	14.00-14.50
St. Louis, steel	15.50-16.00

NO. 1 CAST SCRAP

Birmingham	14.00-14.50
Boston, No. 1 mach.	†11.00
N. Eng. del. No. 2.	12.00
N. Eng. del. textile	15.50-16.00
Buffalo, cupola	14.00-14.50
Buffalo, mach.	15.50-16.00
Chicago, agri. net	10.50-11.00
Chicago, auto	11.50-12.00
Chicago, railr'd net	10.50-11.00
Chicago, mach. net	12.50-13.00
Cincin., mach. cup.	10.50-11.00
Cleveland, mach.	17.00-17.50
Eastern Pa., cupola	16.00-16.50
E. Pa., mixed yard	14.00-14.50
Los Angeles	13.00-14.00
Pittsburgh cupola	16.00-16.50
San Francisco, del.	13.50-14.00
Seattle	8.00
St. Louis, No. 1	12.00-12.50
St. L., No. 1, mach.	12.50-13.00
Toronto, No. 1, mach., net	12.50

HEAVY CAST

Boston dist. break.	†9.25
N. Eng., del.	12.50-13.00
Buffalo, break	11.50-12.00
Cleveland, break.	14.50-15.50
Detroit, break.	10.00-10.50
Detroit, auto net.	12.50-13.00
Eastern Pa.	14.50
Los Angeles	13.00-14.00
New York, break.	†10.50-11.00
Pittsburgh	12.50-13.00

MALLEABLE

Birmingham, R. R.	12.50-13.50
New England, del.	16.00
Buffalo	14.00-14.50
Chicago, R. R.	14.50-15.00
Cincin., agri. del.	10.50-11.00
Cleveland, rail	15.50-16.00
Detroit, auto	11.50-12.00
Eastern Pa., R. R.	16.50-17.50
Los Angeles	13.00-14.00
Pittsburgh, rail	13.75-14.25
St. Louis, R. R.	14.00-14.50

RAILS FOR ROLLING

5 feet and over

Birmingham	16.00-17.00
Boston	†12.00
Chicago	15.00-15.50
Eastern Pa.	18.00-18.50
New York	†15.00-15.50
St. Louis	14.50-15.00

LOCOMOTIVE TIRES

Chicago (cut)	16.00-16.50
St. Louis, No. 1	14.75-15.25

LOW PHOS. PUNCHINGS

Buffalo	17.00-17.50
Chicago	15.00-15.50
Eastern Pa.	19.00-20.00
Pittsburgh (heavy)	18.00-18.50
Pittsburgh (light)	17.50-18.00
Seattle	15.00

Iron Ore

Lake Superior Ore

Gross ton, 51½ % Lower Lake Ports

Old range bessemer	$5.25
Mesabi nonbess.	4.95
High phosphorus	4.85
Mesabi bessemer	5.10
Old range nonbess.	5.10

Eastern Local Ore

Cents, unit, del. E. Pa.

Foundry and basic 56.63% con.	9.00-10.00
Cop.-free low phos. 58-60%	nominal

Foreign Ore

Cents per unit, f.a.s. Atlantic

Foreign manganiferous ore, 45.55% iron, 6-10% man. nom.	12.00
No. Afr. low phos.	nominal
Swedish low phos.	17.00-18.00
Spanish No. Africa basic, 50 to 60% nom.	12.00
Tungsten, sh. ton. unit, duty paid nom.	24.50-25.50
N. F., fdy., 55%	7.00
Chrome ore, 48% gross ton, c.i.f.	$25.50-26.50
Molybdenum ores sulphide, per lb. molybdenum contained, f.o.b. mill	0.75

Manganese Ore

Prices not including duty, cents per unit cargo lots.

Caucasian, 50-52%	non. 45.00
So. African, 50-52% nom.	45.00
Indian, 50-52%	Nominal

Sheets

Sheet Prices, Page 70

Chicago—The sheet market continues quieted by slow demand from the automotive industry and lack of sustained improvement in needs of miscellaneous users. Inventories in general are low, this resulting in more numerous orders for small lots. Business from warehouses is fair though sheets are moving out of store also in limited quantities. Railroads are taking but little material for car repairs and only small lots are required for building of new units. Sheet deliveries range up to three weeks for items requiring the most processing.

Pittsburgh—Orders filtering into mills are from diversified sources. No particular activity has been noticed in any one division, but the aggregate has been enough to hold operations steady on common and full finished sheets at around 26 per cent of capacity. Mills have aided in holding operations steady by filling out their own warehouse stocks in some cases. Galvanized sheets are holding strong, with operations reported up one point to 35 per cent capacity.

New York—Sheet orders are more numerous, although there is little pick-up in general volume. Jobbers are still buying some fill-in tonnage, but in general appear to have ample stocks to last another month. Sheet consumers are placing more orders, but with few exceptions they are small and for rush shipment. An exception is refrigerator manufacturers who are specifying on a constantly expanding scale as the production for the spring buying season gains momentum. However, their releases are not comparable with those of a year ago.

Panama Canal, under schedule 3325, closes Feb. 2 on 385 tons, galvanized corrugated roofing sheets, the inquiry calling for 45,000 individual pieces.

Cleveland — New business in hot and cold-rolled sheets continues on a hand to mouth basis with miscellaneous consumers coming into the market only for actual requirements. Refrigerator and other household electrical equipment manufacturers are reported fairly busy and making considerable headway against finished parts formerly in their warehouses. Mill operations remain spotty, geared to actual demand. This condition has diverted some tonnage to warehouse distributors.

Philadelphia—Some miscellaneous business is coming out, of an encouraging nature. Large users are conspicuously absent. A large bodymaker is holding back on releases. Radio and stovemakers are also taking little tonnage.

Birmingham, Ala. — Roofing continues to supply the backbone of demand for sheets. Drum stock and miscellaneous items are not greatly in demand, but roofing is distinctly encouraging, even in the absence of outstanding single orders.

St. Louis — The sheet situation shows further moderate betterment, attributable almost entirely to purchasing by miscellaneous users. Of the important consuming groups, farm implements is the only one approaching ordinary volume. Activities at stove foundries are slow and the same is true of other users of enameling stock.

Cincinnati—Demand for sheets is between 35 and 40 per cent, due to heavier volume in galvanized and in automobile, electric refrigerator and stove materials. Jobber inventories are low and stocks of other consumers, as judged by renewed buying, are being depleted.

Boston — Mild improvement in buying, generally in small lots, continues, mostly due to depleted items in inventories, notably jobber stocks. Aggregate volume of business is somewhat above last month, but considerably below expectations.

Strip

Strip Prices, Page 71

Cleveland — Specifications continue the moderate improvement of the first half of the month. In some instances it is estimated that total tonnage shipped this month will more than double the December aggregate. Some customers have recently entered the market after being absent two or three months. However, current orders represent only actual requirements and are for prompt shipment. Auto partsmakers have not shown substantial improvement. Prices are unchanged.

Chicago—Strip orders are small individually and what gain has occurred in the number of purchases has caused little change in total tonnage. Automotive buying is unimproved, and consumption among smaller users has changed little so far this month. Inventories have been reduced sufficiently in many instances to require continuous ordering for current requirements.

Pittsburgh — Production of both hot and cold strip dropped off slightly over the past week. Operations on hot mills were estimated at 19 per cent, off three points, while cold strip producers reported production of around 18 per cent, down four points. Demand for strip remains negligible here, with little improvement in sight.

New York — Consumers of cold strip are buying only as needed for curtailed operations, asking prompt delivery, without building up their own stocks to any extent. Finishing mill operations in some eastern districts have slumped further, few being better than 30 per cent. Automobile business is especially dull, although one interest is reported to have placed some business.

Boston — Demand for narrow cold strip is slightly heavier due to a somewhat broader inquiry. Orders still are individually small and for prompt delivery. Some larger consumers are buying practically nothing. Material ultimately finding an outlet through the agricultural implement industry moves steadily and in some instances slight gains have been registered. Incoming volume has not been sufficient to materially change operations which are not above 30 per cent of capacity. Uneven specifications in small lots for rush delivery also handicaps mill schedules. Hot strip users are buying in line with operations. Prices are firm and unchanged.

Philadelphia—While some replacement buying has developed from consumers long absent from the market the total of buying and releases shows only moderate improvement over December. Prices are steady.

Plates

Plate Prices, Page 70

New York—With bids opening Jan. 31 on two tankers for the Socony-Vacuum Oil Co. and Feb. 1 on 12 cargo ships for the United States Maritime commission, the two lists requiring a total of approximately 60,000 tons of hull steel, platemakers anticipate an interesting week.

However, it will probably be some time before this particular tonnage will be translated into rollings, although whatever early decision may be made for construction of these boats should stimulate action on at least half of the 60,000 tons required for the 12 tankers placed by the Standard Oil Co. of New Jersey early this month.

As half of these latter boats will be built by companies with steel works affiliations the placing of steel for these tankers is a foregone conclusion; however, the remaining 30,000 tons, representing needs for the six ships to be built by two independent yards, the Sun Shipbuilding & Dry Dock Co., Chester, Pa., and the Newport News Shipbuilding & Dry Dock Co., New-

port News, Va., remain to be placed and it is pointed out in some quarters that it will be held up until after it is definitely known what action will be taken with respect to the boats for bidding this week.

Meanwhile, ship news continues to pile up. In addition to one tanker on which action is expected early in February, Union Oil Co. of California will soon take bids on two other tankers. The United States Maritime commission has just announced the signing of a long-term subsidy contract with the American Export Lines, specifying the construction of 10 cargo ships over the next five years, with four to be gotten under way in 1938. Word from Washington this week gave virtual assurance of the early inauguration of the President's $560,000,000 naval program, which will carry on in expanding scale the large operations already under way, the largest since the World war.

With the contract with the American Export Lines, the Maritime commission now has long-term subsidy contracts with eight steamship companies, the agreements calling for 30 new vessels by the close of 1942. Work on 14 of the vessels on the commission's program, apart from the four for the American Export Lines, will be started this year, it is said.

Miscellaneous plate demand shows some slight improvement, but the absence of important railroad business is seriously felt by platemakers.

Export inquiry is featured by 10,000 tons for Finland, with several other lists of 100 to 5000 tons. Norway is also showing much interest. Lower prices by the European steel entente have dampened enthusiasm of domestic makers for export sales.

Chicago—Plate orders are small individually, business being restricted by lack of improvement in demand for fabricated structural steel as well as by continued quiet in railroad equipment building and repair work. Tank inquiries include few large lots, though prospects in the oil industry this year are regarded as favorable. Plate deliveries usually are a week to ten days.

Pittsburgh—Activity in plate is near the bottom here with few new inquiries. Some hope for the future is held by virtue of scattered announcements of building programs among some of the minor roads, with a certain demand expected in export trade. Some plate mills in this district are completely down with none operating on a full schedule.

Philadelphia—Plate makers are cheered over bright prospects for ship work, though much of this will come out too late to help take up current slack. Meanwhile general plate demand continues irregular and of miscellaneous character with tank and ship repair work most prominent.

Cleveland — Plate sellers note little change in demand for tank work, boiler heads and other miscellaneous requirements. However, the American Rolling Mill Co., through the Ohio Corrugated Culvert Co., Middletown, has booked 650 tons of 36-inch steel pipe for a water main development running from Parma reservoir to Rocky River, O., for the city of Cleveland. The Chesapeake & Ohio has decided to build 14 tenders involving approximately 350 tons, in its own yards.

Boston — Bids close Feb. 4 under four schedules for partial steel requirements for four destroyers, two being constructed at Boston, 5782 tons, largely plates, although sheets, strip, bars and shapes are also included. On the same date, quotations will also be taken on corrosion-resisting sheets and strip for four submarines being built at Portsmouth, N. H. Of the 5782 tons above, half is for Boston, the remainder for delivery at Charleston, S. C., and Puget Sound, Wash. Demand for plates in other directions is light and unchanged with small orders predominating. A Pittsburgh tank fabricator booked 180 tons for a standpipe in this district.

Birmingham, Ala. — Southern mills are doing only a scattered and light business in plates. Only exceptionally small orders are available.

San Francisco — The only important plate inquiry pending involves 12,000 tons for the Grand Coulee dam penstocks, on which Western Pipe & Steel Co. is low bidder. Columbia Steel Co. was awarded 270 tons of sheets for 1939 license plate requirements of Washington state. Less than 100 tons have been placed this year, compared with 2534 tons for the corresponding period in 1937.

Seattle—No important projects are pending but shops report an increased volume of small jobs, including seasonal boiler work. Several water system improvements in Oregon and Washington involve steel storage tanks. Harrington, Wash., opened bids Jan. 24 for an elevated tank involving about 60 tons and Pasco, Wash. has called bids Feb. 3 for a large steel tank and tower. On the same date Riverland Irrigation district, Allard, Wash., will open bids for a project involving a 48-inch intake pipe. No award is yet announced on 165 tons for a storage tank at McNeil Island, Wash., prison. Seattle is expected to call new bids soon for the Volunteer Park-Magnolia extension, requiring 2800 tons of plates or 3500 tons of cast iron pipe.

Plate Contracts Placed

13,696 tons, armor plate for navy department, to Bethlehem Steel Co., Carnegie-Illinois Steel Corp. and Midvale Co., the larger portion to the former.

650 tons, water main, 9000 feet of 36-inch steel pipe, running from Parma reservoir to Rocky river, for city of Cleveland, to Ohio Corrugated Culvert Co., Middletown, O.

260 tons, 24-inch welded steel pipe, Ashland, Ky., to American Rolling Mill Co., Middletown, O.

180 tons, 1,250,000-gallon standpipe, Scituate, Mass., to Pittsburgh-Des Moines Steel Co., Pittsburgh; reported last week as going to another fabricator.

Unstated tonnage, 110-foot steel stack, 5-foot diameter, Independent Milwaukee Bearing Co., to Milwaukee Reliance Boiler Works, Milwaukee.

Plate Contracts Pending

4450 tons, plates, sheets and strip, mostly former, bureau of supplies and accounts, navy department, for delivery at Boston, Charleston, S. C., and Puget Sound, Wash.; bids Feb. 4, schedule 2706; material is for four destroyers, two building at Boston and one each at other yards.

261 tons, plates, sheets and shapes, relay barge, schedule 3317, Panama; bids Feb. 3, mostly plates.

100 tons, three 250-horsepower boilers for Los Angeles county, California; bids opened.

Bars

Bar Prices, Page 70

Cleveland — Producers of carbon and alloy steel bars report new business has shown a slight increase over the corresponding period a month ago, despite the fact auto partsmakers have failed to show the expected improvement. Farm and road equipment manufacturers continue to dominate current requirements. The outlook in these two industries appears even more encouraging over the next few months. Present buying is still on a hand to mouth basis, limited to actual requirements, although in a number of instances inventories are exhausted.

Chicago—While occasional small gains are appearing in steel bar demand, no definite trend in total business is noted. Farm equipment manufacturers continue to provide the best business, and despite less favorable outlook for this industry than prevailed a few months ago, operations are sustained better than among other leading bar users. Needs of railroads are almost negligible compared with those a year ago, while automotive business also is dragging.

Pittsburgh—Some sporadic buying to replenish stocks has been noted by bar producers here. Most of it is in small quantities, of vary-

ing specifications, denoting buying only to fill orders on hand. No tonnage orders have been booked and inquiries remain sparse.

Boston — Recent slight gain in commercial steel, alloy and forging bar demand has not held in some directions, notably carbon bars. Alloy demand is in small lots and most forging shops appear to have covered temporarily. Machinery builders continue to buy in small shipments, generally from secondary distributors. There is little forward purchasing for inventory needs with consumers specifying close to actual requirements for at once delivery.

New York — Bar demand continues restricted, although oil company releases are notable and machinery manufacturers are specifying a fair volume. The latter consumers are witnessing a falling off in new orders, but still have a moderately good backlog of business on hand. Speaking of the heavy products in general, plates and shapes, as well as bars, oil companies at present are possibly the leading buyers here. Their purchases, however, reflect principally routine requirements, rather than new expansion.

Birmingham, Ala. — While the slight improvement in demand for bars is fairly well maintained, there has been nothing like the expected demand as manufacturers appear hesitant to enter the market with any volume business.

Philadelphia — Miscellaneous bar demand shows a slight but steady improvement. The appearance of some buyers after long absence from the market is regarded as especially encouraging. Warehouse inventories are substantial but some replacement buying is noted.

Pipe

Pipe Prices, Page 71

Chicago—Shell Petroleum Corp. plans to build an extension to its pipe line from Wood River, Ill., to Indianapolis, the addition extending the line to Toledo, while a spur will be built from Lima, O., to Columbus, O. Pipe will be 6-inch size. Cast iron pipe market continues quiet as regards new business, but pending and prospective inquiries point to some small pickup in bookings later this quarter.

Cleveland — Steel pipe requirements from domestic and industrial sources are unchanged, but some improvement is looked for over the next 30 days. Cast iron pipe foundries report a slight improvement in small orders from municipalities and for WPA work. U. S. Pipe & Foundry Co., Burlington, N. J., re-

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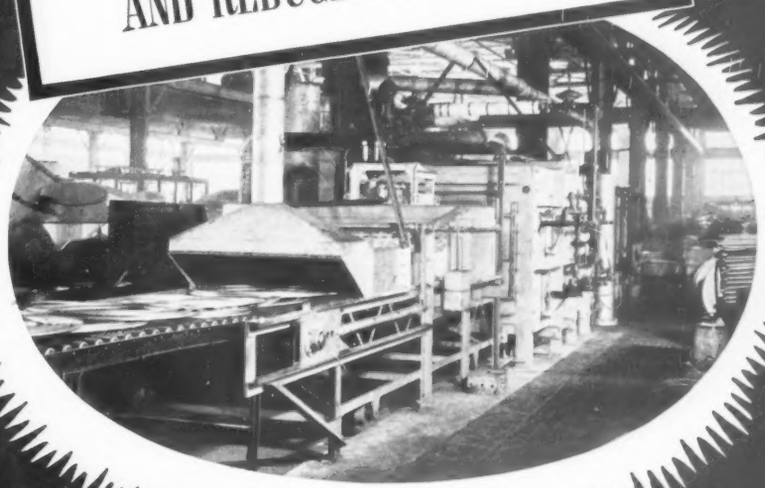

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cently booked 600 tons of 4 to 12-inch cast pipe for a water extension project at Cincinnati. Most foundries are on a three to four day weekly schedule, but expect substantial improvement soon from a broadening of WPA activity. Prices are unchanged.

Pittsburgh—Production rate on tubular goods continues to hold up in this district, although demand is light. Orders are small and most of the production is due to building up of stocks by producers in preparation for spring activity when releases are expected on several large projects.

New York—Cast pipe buying has slumped with miscellaneous fill-in needs smaller, few inquiries appearing for more than 100 tons. Bids close Feb. 10 on a water line, Avenue P and 65th street, Brooklyn, requiring a substantial tonnage of steel pipe and a smaller amount of cast. Estimates are being taken by the department of water supply, gas and electricity. Practically nothing has emanated from utilities in regard to this year's cast pipe needs.

Adverse weather conditions recently have tended to restrict demand for steel pipe, although a tonnage of large size pipe for the municipal water department will be up for figures Feb. 10. The pipe is for installation in Avenue P, Brooklyn. Resale prices on merchant pipe are the steadiest here in considerable time.

Boston — Cast pipe buying for early delivery lags, but a fair volume of business is being placed under blanket contracts for partial annual needs by some of the larger municipalities. Merchant steel demand is small, but steady, with no inquiry out for large-diameter steel material. Wrought pipe moves in small lots. Lowell, Mass., has covered on its 1938 cast pipe needs with the Lowell Iron & Steel Co., jobbers. Newton, Mass., and Kennebunk, Me., have bought several hundred tons.

Birmingham, Ala. — Pipe plants are producing on a comparatively satisfactory basis on small orders. A few new inquiries are reported, but utility business is less than for several months.

Seattle—Prospects are brightening as municipalities obtain funds for expansions. Lowell, Wash., water district will purchase materials soon. Pleasant Home, Oreg., has awarded contract for a $27,076 improvement to Eugene Ruedy, Portland.

San Francisco — Only two cast iron pipe lettings of size were reported. United States Pipe & Foundry Co. took 159 tons for the treasury department, San Francisco, and American Cast Iron Pipe Co. booked 130 tons for Turlock, Calif. On a contractor's letting for the La Mesa, Lemon Grove & Spring Valley irrigation district, La Mesa, Calif., United States Pipe & Foundry Co. is apparently low. So far this year 317 tons have been placed, compared with 679 tons for the same period a year ago.

Steel Pipe Placed

800 tons, 6-inch and under, welded steel pipe, bureau of supplies and accounts, navy department, delivery eastern yards, to Albert & Davidson Pipe Corp., Brooklyn, $88,302.21, bids Dec. 7, schedule 2135, lot 270.

Unstated tonnage, 320 lengths, 28-inch steel land pipe, U. S. engineer, Fort Peck, Mont., to Bethlehem Steel Co., Bethlehem, Pa., at $74.50 per length, f.o.b. Leetsdale, Pa.; bids Jan. 5, circular 186.

Cast Pipe Placed

350 tons, 6 and 8-inch, Newton, Mass., to Warren Foundry & Pipe Co., Everett, Mass.

200 tons, 12-inch, Kennebunk, Me., to United States Pipe & Foundry Co., Burlington, N. J.

159 tons, 6-inch, Class 150, treasury department, invitation 4938, San Francisco, to United States Pipe & Foundry Co., Burlington, N. J.

130 tons, 10-inch, Turlock, Calif., to American Cast Iron Pipe Co., Birmingham, Ala.

100 tons, 6-inch, state procurement officer, Madison, Wis., to United States Pipe & Foundry Co., Chicago, $42.60 a ton net; bids Jan. 5.

Unstated tonnage, 12,500 feet of 6 to 12-inch centrifugal water pipe, town of Greenfield, Milwaukee county, Wis., to James B. Clow & Sons, Chicago.

Cast Pipe Pending

918 tons, 4 to 12-inch, La Mesa, Lemon Grove and Spring Valley irrigation district, La Mesa, Calif.; United States Pipe & Foundry Co., Burlington, N. J., low.

190 tons, 6-inch, Class 150, treasury department, invitation 4950, San Francisco; bids opened.

100 tons, 6 to 14-inch, for sewer system, Placerville, Calif., alternate on various classifications; bids opened.

Wire

Wire Prices, Page 71

Chicago—Only a small betterment has occurred in wire business this month, the improvement largely being attributed to need for additional material to supplement depleted stocks of consumers. Automotive needs still lag, while operations of miscellaneous users of manufacturers' wire have shown small change. Distributors of merchant wire products are hesitant to increase stocks in anticipation of spring trade.

Cleveland — Consumers of manufacturing wire, particularly nut and bolt manufacturers, and partsmakers supplying auto builders, have within the last 30 days been re-entering the market in increasing numbers, as inventories reached rock bottom. However, no attempt is being made to rebuild inventory positions to former levels, at least until a more definite future trend is predictable. Most jobbers have depleted stocks until buying for fill-in purposes has become necessary. Mill prices are firm.

Pittsburgh—Investigation of inquiries for wire in this district shows in many cases they come from manufacturers or jobbers who have been out of the market for an extended period. This indicates cleaning out of stocks laid down in or before fourth quarter and seems to show a continuance of the steady but slow buying which has characterized the market for several weeks.

Boston — Without much support from the automotive industry, wire demand has improved slightly. Some producers' bookings in January are well above last month. This gain has been evident during the last 10 days and comes from miscellaneous consumers. Some specialties are more active. While incoming volume is heavier, the upturn has not been enough to change finishing operations as a whole although some departments are busier. Prices are steady with little pressure for concessions.

New York — Although improvement is slight, there are a few small gains in buying of wire products, notably rope, while the recent mild upturn in merchant goods is maintained. Electrical wires are slowed down by the unsteady copper market with considerable prospective volume held up. Demand from the automotive industry is especially slack and manufacturers' wire drags. Business in rods is also dull. Inventories of fabricators are low, but stocks of their finished goods are substantial in numerous instances.

San Francisco—Movement of wire products is holding up well for this season of the year, but in relatively small lots. Anaconda Wire & Cable Co., Los Angeles, secured 111 tons of AWG copper wire for the water and power department of that city. Bids open Feb. 8 for 275 tons of copper or aluminum wire for the Imperial irrigation district, Imperial, Calif.

Semifinished

Semifinished Prices, Page 71

Pittsburgh—Few shipments have been made in semifinished steel here with the domestic market practically nonexistent. A few scattered tonnages of billets have been placed but in quantities so small that no indications can be taken from them.

Rails, Cars

Track Material Prices, Page 71

Purchase by the Atchison, Topeka & Santa Fe of two seven-car streamlined trains from Edward G. Budd Mfg. Co., Philadelphia and application by the New York, New Haven & Hartford for court permission to buy 50 streamlined coaches and 10 diesel-electric switch engines formed the high light of the week in railroad buying.

Lehigh Valley plans repairs on 1460 steel hoppers if an RFC loan is approved by the interstate commerce commission. Bangor & Aroostook is inquiring for 2900 tons of rails.

Chicago, Milwaukee, St. Paul & Pacific is considering a carbuilding program to follow completion of 1000 freight cars at its Milwaukee shops, probably starting in March. Definite plans await business developments and the rate situation.

Railroads in 1937 placed in service 75,058 new freight cars, the largest number for any year since 1930, according to the Association of American Railroads. Orders for new cars placed in 1937 totaled 51,611, as reported in STEEL, Jan. 10, page 80. The excess of deliveries over orders came from the carryover from the 64,643 cars placed on order in 1936.

Rail Orders Pending

Bangor & Aroostook, 2900 tons rails and fastenings.

Car Orders Placed

Santa Fe, two 7-car streamlined trains, to the Edward G. Budd Mfg. Co., Philadelphia; diesel motive power will be supplied by the Electro-Motive Corp., La Grange, Ill.

United States engineer, Honolulu, T. H., 300 special steel cars, to Kyle Steel Construction Co., Los Angeles.

Car Orders Pending

Navy, six flat cars, Haffner-Thrall Car Co., low.

New York, New Haven & Hartford, 50 streamlined air-conditioned coaches, application made to Federal district court for permission to expend the $2,100,000 required; also 10 diesel switch engines to cost $750,000.

Locomotives Pending

New York, New Haven & Hartford, 10 diesel switch engines, court application made for permission to spend the necessary $750,000.

Cold Finished

Cold Finished Prices, Page 71

Pittsburgh — With automotive builders and jobbers quiet and farm equipment makers past the peak of their manufacturing season, cold-drawn steel production remains at the low level of past weeks. All buying is still hand to mouth with orders appearing from a wide variety of sources.

Tin Plate

Tin Plate Prices, Page 70

New York—For the first time this year some of the larger consumers of tin plate are now active. They are not buying on anything like as large a scale as a year ago, but are nevertheless closing on some fair tonnage for March and April delivery, and in an important measure, undoubtedly, to meet requirements of the approaching fish canning season. Shortly several of the smaller local consumers are expected to become more active as stocks on hand carried over from last year appear to be sufficient to last them no longer than until the

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end of next month on an average. Export buying still lags.

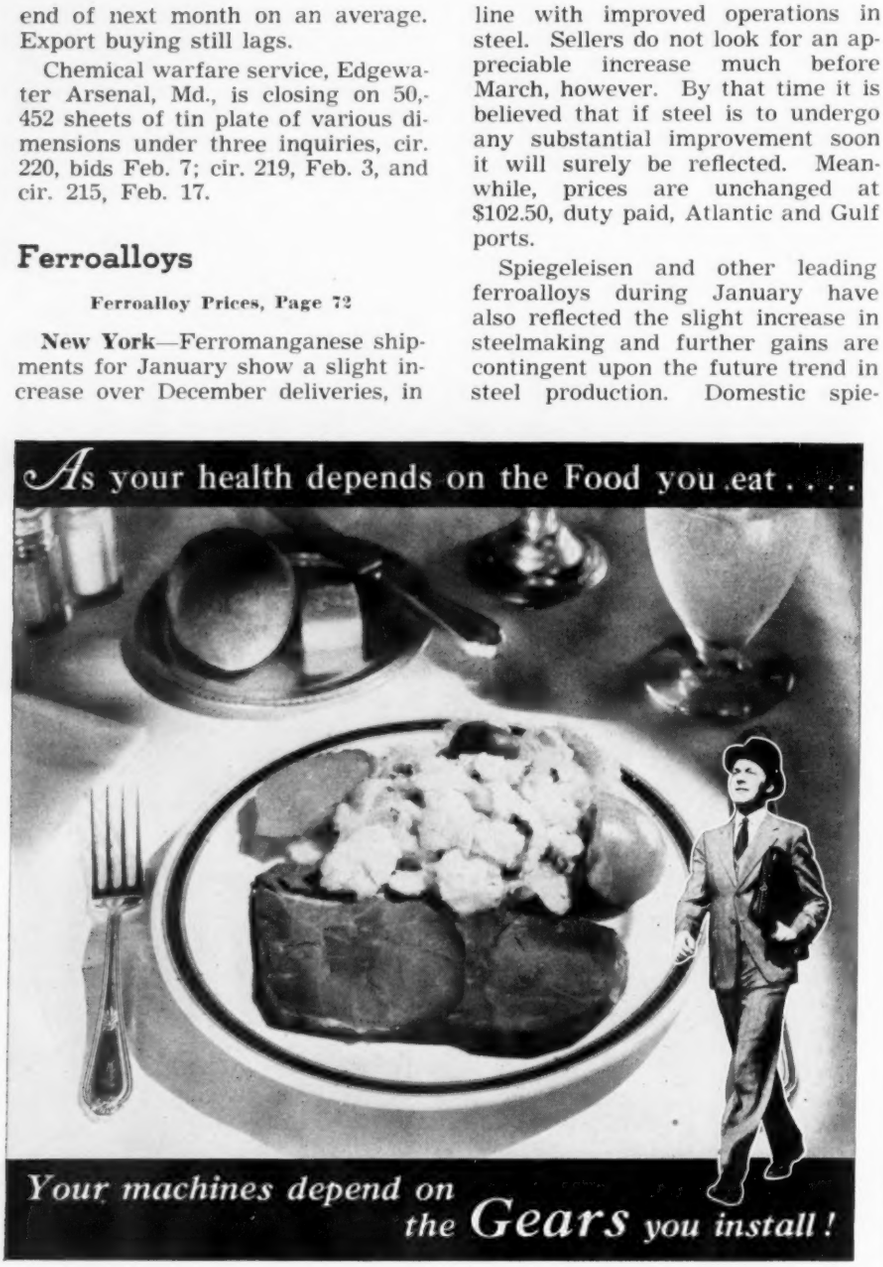
Chemical warfare service, Edgewater Arsenal, Md., is closing on 50,452 sheets of tin plate of various dimensions under three inquiries, cir. 220, bids Feb. 7; cir. 219, Feb. 3, and cir. 215, Feb. 17.

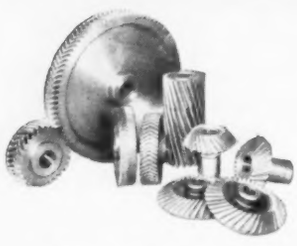
Ferroalloys

Ferroalloy Prices, Page 72

New York—Ferromanganese shipments for January show a slight increase over December deliveries, in line with improved operations in steel. Sellers do not look for an appreciable increase much before March, however. By that time it is believed that if steel is to undergo any substantial improvement soon it will surely be reflected. Meanwhile, prices are unchanged at $102.50, duty paid, Atlantic and Gulf ports.

Spiegeleisen and other leading ferroalloys during January have also reflected the slight increase in steelmaking and further gains are contingent upon the future trend in steel production. Domestic spiegeleisen, 19 to 21 per cent, is holding at $33, Palmerton, Pa., and 26 to 28 per cent at $39. Other ferroalloy prices are steady.





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Shapes

Structural Shape Prices, Page 70

Chicago — Structural fabricators have reduced backlogs the past several weeks, but volume of pending business points to some improvement in the near future. Awards are small and most new inquiries involve 500 tons or less. New jobs taking 100 tons or less total around 6000 tons.

Pittsburgh — Although inquiries have increased, tonnages involved are quite small aggregating about the same as preceding weeks. Largest order placed recently was for 950 tons of bulb angles, allotted by the treasury department, New York, to American Bridge Co., Pittsburgh. Pending contracts are insignificant.

Cleveland — Outstanding recent award went to Truscon Steel Co., Youngstown, O., involving 700 tons for stock bins, chutes, cast house and skip bridge for Republic Steel Corp. at Youngstown. Other awards are limited to miscellaneous small tonnages. Inquiries are becoming more numerous although still restricted to small projects. Burns & McDonnell, Kansas City, are drawing plans for a new power plant for Sandusky, O., involving approximately 800 to 1000 tons. Fabricated prices continue to be shaded, but mill prices are firm.

Boston—With bridge inquiry lacking, structural steel up for estimates is limited to small lots, mostly public work, with few outstanding tonnages active. Contractors are slow to close on pending projects and in most instances are shopping for lower prices.

Philadelphia — Numerous Pennsylvania state jobs now up or scheduled for bids next two months involving expenditure $27,000,000, in addition to half dozen jobs on which

Shape Awards Compared

	Tons
Week ending Jan. 29	16,507
Week ended Jan. 22	23,094
Week ended Jan. 15	15,625
This week, 1937	64,988
Weekly average, 1937	16,060
Weekly average, 1938	16,150
Weekly average, December	13,591
Total to date, 1937	158,329
Total to date, 1938	80,748

Includes awards of 100 tons or more.

bids are in. Sordini Construction Co., Wilkes-Barre, is low on buildings Mansfield State Teachers college, requiring 375 shapes and 250 bars. Prospects for large private jobs are brighter with Sun Oil Co. planning large expenditures at Marcus Hook, Pa., and Dupont considering further expansion. Akson Sanitary Mfg. Co. is planning a large plant at Trenton. Small private jobs are slow in coming out.

San Francisco — The outstanding award so far this year has recently been placed with Inland Steel Co. involving 1812 tons of sheet piling for the United States engineer office, Los Angeles. Bids have been postponed on the improvement of the Alameda, Calif., waterfront for the navy department and will be opened Feb. 9. From 1780 tons to 5000 tons of sheet piling will be needed. So far this year 3900 tons have been booked, compared with 13,817 tons a year ago.

New York — While awards are down, led by 1470 tons for a hangar, North Beach airport, New York, inquiry is substantially increased by requirements for the Queens land section of the Queens-Manhattan tunnel, closing Feb. 24 and taking bids close to 4500 tons of structural material. Several small bridge projects have also been placed in New Jersey. Contractors are slow to close on considerable volume.

Shape Contracts Placed

6000 tons, unit No. 7, Associated Press building, Rockefeller Center, New York, to Bethlehem Steel Co., Bethlehem, Pa.; through Hegeman-Harris Co. Inc., New York, general contractor.

1812 tons, sheet piling, United States Engineer office, Los Angeles, proposal 203, to Inland Steel Co., Chicago.

1470 tons, land hangar, North Beach airport, New York, to Bethlehem Steel Co., Bethlehem, Pa.; bids Jan. 25 to procurement officer, treasury department, New York.

700 tons, stock bins, chute, cast house and skip bridge, for Republic Steel Corp., at Youngstown, to Truscon Steel Co., Youngstown, O.

600 tons, Seattle armory building, to Isaacson Iron Works, Seattle; A. D. Belanger, Seattle, general contractor.

590 tons, municipal auditorium, Charleston, W. Va., to Virginia Bridge Co., Roanoke, Va.

525 tons, store building, Montgomery Ward Co., Trenton, N. J., to Lehigh Structural Steel Co., Allentown, Pa.

470 tons, buildings, Fairview state hospital, Pennsylvania, to Lehigh Structural Steel Co., Allentown, Pa.

420 tons, bridge FAS 203-H, Sandeval county, New Mexico, to American Bridge Co., Pittsburgh.

380 tons, high school building, Elgin, Ill., to Bethlehem Steel Corp., Bethlehem, Pa.

350 tons, Cuyahoga Heights high school, Cleveland, to Kilroy Structural Steel Co., Cleveland.

325 tons, library, Drew University, Madison, N. J. to Keystone Structural Co., Trenton, N. J.; through Turner Construction Co., New York.

300 tons, state bridge near Orofina, Idaho, to unstated interest; Colonial Construction Co., Spokane, general contractor.

255 tons, substations C and F, Memphis, Tenn., to Tulsa Boiler & Machinery Co., Tulsa, Okla.

250 tons, highway project, route 25, section C, Tonnelle avenue, Jersey City, and depressed highway connection with Lincoln tunnel, Union City, N. J., to American Bridge Co., Pittsburgh; George M. Brewster & Sons Inc., Bogota, N. J., general contractor.

250 tons, shapes and bars, men's dormitory, Howard university, Washington, to Barber & Ross Co., Washington, shapes, and Pollak Steel Co., Cincinnati, bars; Charles H. Tompkins Co., Washington, general contractor.

250 tons, storehouse annex No. 2, treasury department, Brooklyn, to Belmont Iron Works, Eddytsone, Pa.

250 tons, building, Armstrong Cork Co., Los Angeles, to Western Metal & Iron Works, Los Angeles.

250 tons, state bridge, Skykomish river, Washington, reported to Poole & McGonigle, Portland; Neukirk Bros., Seattle, general contractor.

200 tons, state highway bridges, Forestburg and Bristol, S. Dak., to Pittsburgh-Des Moines Steel Co., Pittsburgh.

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Behind the Scenes with STEEL

Phenomena

■ Down in the flats here, almost within the proverbial stone's throw of STEEL's ed. and exec. offices, Republic's new 15,000,000 buck mill is rolling steel in a manner a la mode. *Cleveland Plain Dealer* sent a reporter down to see the goings on, after which a front page story was run containing this journalistic gem: ". . . The relatively small chunk of steel is now a long ribbon. It dashes along on the powered rollers like a train. It sounds like a train. It is still cherry red, and if you stand near by you will find perspiration gathering on your forehead and admiration in your heart." Something about that that's pretty graphic, no?

It Ain't News

■ In the meantime, down in Pittsburgh, the local section of the Iron & Steel Engineers took a trip through the Jones & Laughlin 96-inch mill. An important occasion, gentlemen of the press were invited to come along, as guides explained the workings of the new mill and its $25,000,000 worth of equipment. The g. of the p., however, yawned boredly and wandered off to see other sights in the building. Nearly an hour later they were discovered in the galvanizing department watching with undisguised amazement the actions of a worker there who was picking up sheets one at a time with the aid of a two-bit suction cup attached to the back of his hand. And the newsmen were shaking their heads in wonder at the marvels of modern science.

Behind the Front

■ Battle No. 11 in the undeclared war between Shrdlu and the Readers Service Dept. took place yesterday when the RSD sent up Capt. Charlie Shmidth of the RSD secret police to heckle us about our first page layout of the steel spoons story (see p. 44, this issue). Incidentally, Capt. Charlie's name isn't spelled Shmidth, but all's fair in war. By way of reprisal we plan to conduct our own reader survey and show how many STEEL subscribers read only Behind the Scenes. RSD then threatens to conduct a direct mail campaign warning readers not to read this column. But we have an ace up our sleeve—a gigantic expose of the entire RSD, its personnel, its dread secret police (formerly the OGPU), and the way it works. We have to admit, though, that no matter what requests the Readers Service Department gets from readers, it always manages to come through with the proper information, the correct answers, or the desired results. We can only defy it to reveal the means by which it obtains its wealth of facts and figures for the benefit of readers.

On Slabs

■ The Humble Pie division of the Errors, Corrections and Omissions dept. wishes to point out that the fine yarn concerning the warming up of cold slabs (see Progress in Steelmaking, p. 54, this issue) was written by A. W. Pishta of Pittsburgh, a technical writer of the first magnitude.

Just Moly and Me

■ With a polite cough and a subtle nod of the head we call attention to the new, enlarged and improved table of warehouse steel prices that made its debooh in this periodical last Monday and will continue as a weekly feature. The figures are compiled by mail and wire each week from 25 major warehouse centers—and warehouse men themselves aided in development of the new tables. Also of note is the inclusion of two more moly prices in the market section, namely viz to wit: technical molybdenum trioxide and sulphide molybdenum ores.

—SHRDLU

160 tons, building, World's fair, New York, Johns-Manville Corp., to Belmont Iron Works, Eddystone, Pa.

142 tons, additional, warehouse for Oahu railroad, Honolulu, to Virginia Bridge Co., Roanoke, Va.

133 tons, sheet piling, United States Engineer office, Los Angeles, proposal 182, to Columbia Steel Co., San Francisco.

120 tons, beam spans No. 992-D, Yakima canal, for bureau of reclamation, Moxee City, Wash., to Midwest Steel & Iron Co., Denver.

115 tons, chemistry building, Lowell Textile Institute, Lowell, Mass., to New England Structural Co., Everett, Mass.; Louis Marion & Co., Lowell, general contractor.

110 tons, bridge No. 19112, Chicago, Burlington & Quincy railroad, East Dubuque, Ill., to Bethlehem Steel Co., Bethlehem, Pa.

100 tons, bridge FAP 180-E, Chaves county, New Mexico, to American Bridge Co., Pittsburgh.

100 tons, Seattle Gas Co, plant extension, to Pacific Car & Foundry Co., Seattle.

Unstated tonnage, supporting structures for Metropolitan water district and Southern California Edison Co., transformer circuits at Boulder switchyard to International Derrick & Equipment Co. of California, Torrance, Calif.; bids Jan. 3, bureau of reclamation, Denver, specification 1002-D.

Shape Contracts Pending

4500 tons, Queens land section, Queens-Manhattan midtown tunnel; bids Feb. 24, New York Tunnel Authority.

1000 tons, power house for city of Sandusky, O.; Burns & McDonnell, Kansas City, Kans., engineers.

850 tons, ramps, West side elevated highway, 133-136th streets, New York; George F. Driscoll Co., Brooklyn, low.

638 tons, shapes and angles, bureau of supplies and accounts, navy department, for delivery at Boston, Charleston, S. C., and Puget Sound, Wash.; bids Feb. 4, schedule 2705; for four destroyers, two building at Boston and one each at other yards.

600 tons, adminitsration, hospital and auditorium building, Auburn State prison, Auburn, N. Y.; C. F. Haglin & Sons Co., Buffalo, low.

500 tons, oil derricks, Corpus Christi, Tex.

470 tons, Lockhaven state teachers collegs; bids in.

450 tons, I-beam bridges, Carthage, O., for state highway department.

400 tons, Allentown state hospital; bids in.

375 tons, Mansfield teachers college; Sordini Construction Co., Wilkes-Barre, Pa., low.

350 tons, manufacturing plant, Boston Steel Construction Co., Baltimore.

350 tons, school building, Jeffersonville, N. Y.

340 tons, municipal boiler plant, Columbus, O.

340 tons, planetarium, Buhl Foundation, Pittsburgh.

325 tons, store and theater, Jurale Corp., New York.

318 tons, bridge for San Pedro branch line of Southern Pacific Co., United States engineer office, Los Angeles; bids Feb. 3.

315 tons, bridge over Compton creek; bids Feb. 3 to United States Engineers office, Los Angeles.

300 tons, state highway bridge, route 158, section 4-B, Pleasant Hill, Ill.

300 tons, Valentine Boys' club building,

Chicago; new bids asked.
300 tons, bridge, Moberly, Mo.
285 tons, stadium, De Pere, Wis.
250 tons, plant expansion, Linderme Tube Co., Cleveland; bids soon.
250 tons, cranes, American Rolling Mill Co., Middletown, O.
250 tons, building, Picher, Okla.
233 tons, upset rods and miscellaneous steel, United States engineer office, proposal 233, Los Angeles; bids opened.
230 tons, bridge, McCormick, S. C.
225 tons, tunnel supports, also 40 tons miscellaneous, Yakima Ridge canal, Roza project, Washington; bids at Yakima, Wash., Feb. 9.
196 tons, galvanized high tensile shapes and angles, bureau of supplies and accounts, navy department, for delivery Boston, Charleston, S. C., and Puget Sound, Wash.; bids Feb. 4, schedule 2707; for four destroyers, two building at Boston and one each at other yards.
185 tons, schools, Beacon, N. Y.
185 tons, library addition and auditorium, Clark University, Worcester, Mass.
125 tons, West Chester teachers college; Consolidated Engineering Co., Baltimore, low.
120 tons, high school, Richmond, Ind.; Henke Construction Co., Chicago, general contractors.
120 tons, building, Montclair riding club, West Orange, N. J.
120 tons, highway span for spillway, specification 1020-D, Fresno, Mont.
Unstated tonnage, sheet steel piling, improvement Alameda waterfront for navy department, California; bids postponed until Feb. 9.
Unstated tonnage, 41 bulkhead gates, frames, etc., for Coulee project; Koppers Co., Baltimore, low.
Unstated tonnage, three 42-inch gates for Owyhee project; bids at Denver, Jan. 31.
Unstated tonnage, shapes and castings for highway bridge spillway, Fresno dam, Mont.; bids at Denver, Feb. 1.
Unstated tonnage, 30 bulkhead gates for Coulee project; bids at Denver, Feb. 9.

Reinforcing

Reinforcing Bar Prices, Page 71

Chicago—Concrete bar distributors are figuring on a fair number of jobs, total tonnage of which makes a favorable comparison with structural projects. More than 1000 tons of bars is involved in pending and prospective work for the Illinois highway department, and bids are to be asked shortly on 700 tons for a store building here. Shipments against orders are steady.

Pittsburgh — Operating schedules are holding about the same rate, with producers slightly more optimistic about the balance of the year. Inquiries and awards are still extremely light. Pending jobs include The Wayne county road job involving 750 tons, all previous bids for which were rejected.

Cleveland — Reinforcing steel requirements have failed to show gain. Jobbers expect little improvement soon, although they claim the situation can change almost overnight, for a number of jobs are currently shelved awaiting a more definite future trend in general business conditions. The city of Cleveland recently awarded 300 tons of bars to Kilroy Structural Steel Co., Cleveland, for the easterly sewage disposal plant. Prices are reported firmer.

Boston—Low bid on five of the seven specifications included in 150 tons of reinforcing bars for the state procurement officer, Boston, closing Jan. 24, was $53.40 a ton delivered, Boston. Part of the lot brought $55.40 and $57.40. A 30-day discount of one-half of one per cent was included in the estimate, low being W. Ames & Co., Jersey City. Less than half a dozen projects are pending taking 100 tons or more. The bulk of inquiries are made up of a fair number of small tonnages.

Philadelphia — Largest single job before the trade is a warehouse for Lit Bros. department store, Philadelphia, on which tenders are asked Feb. 3 and reported requiring 1000 tons and similar amount of shapes. Little private work has appeared.

San Francisco—Less than 1200 tons were placed last week and no new inquiries of size developed. The

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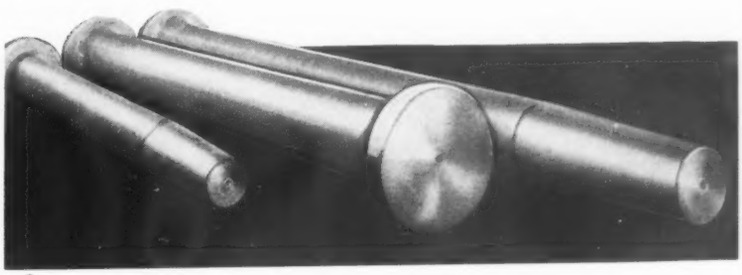

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largest award went to Soule Steel Co. and called for 181 tons for an administration building and grandstand addition at the fair grounds, Sacramento, Calif. Awards aggregated 1152 tons and brought the total for the year to 9620 tons compared with only 2674 in 1937.

Seattle — Inquiry is increasing, mostly lots less than 100 tons for school structures. Industrial construction is unimportant. Largest award in several weeks, 1000 tons for the Seattle armory, was placed with Bethlehem Steel Co., Seattle. Reclamation bureau will receive bids at Cody, Wyo., Feb. 10 for Heart Mountain canal, Shoshone project, Idaho, calling for 700 tons. Montana highway board has set March 18 as tentative date for opening bids for $250,000 underpass in Missoula.

New York—Buying of reinforcing steel is delayed by contractors who are seeking lower prices. Two contracts are reported placed, however, taking 925 tons, both municipal work. New inquiry is led by the mid-town tunnel, closing Feb. 24, and concrete piles, North Beach airport, New York, Feb. 1.

Concrete Bars Compared

	Tons
Week ending Jan. 29	**5,211**
Week ended Jan. 22	**1,798**
Week ended Jan. 15	**8,717**
This week, 1937	**3,191**
Weekly average, 1937	**6,266**
Weekly average, 1938	**5,845**
Weekly average, December	**4,111**
Total to date, 1937	**15,611**
Total to date, 1938	**29,204**

Includes awards of 100 tons or more.

Reinforcing Steel Awards

1700 tons, Grand Coulee dam, Washington, to Columbia Steel Co., San Francisco.

1000 tons, Seattle armory structure, to Bethlehem Steel Co., Seattle; A. D. Belanger, Seattle, general contractor.

700 tons, buildings, Tallmans Island sewage disposal plant, New York, to Carroll-McCreary Co. Inc., Brooklyn; Caye Construction Co., New York, general contractor.

475 tons, Redford school, Detroit, to McRae Steel Co., Detroit.

300 tons, Easterly sewage plant, Cleveland, to Kilroy Structural Steel Co., Cleveland.

181 tons, administration and an addition to grandstand, State Fair Grounds, Sacramento, Calif., to Soule Steel Co., San Francisco.

150 tons, tuberculosis sanitorium, Denmar, W. Va., to West Virginia Rail Co., Huntington, W. Va.

150 tons, state procurement officer, treasury department, Boston, to W. Ames & Co., Jersey City, N. J.; bids Jan. 24, schedule 469. On bulk of items $53.40 per ton delivered was quoted.

150 tons, telephone building, Glendale, Calif., to unnamed interest.

105 tons, building, Cremo Brewing Co., New Britain, Conn., to Topper & Griggs, Hartford, Conn.; Hasson & Downes, New Britain, general contractor.

100 tons, widening of bridges in Los Angeles county, California, to unnamed interests.

100 tons, Sweetwater river bridge, San Diego county, California, to unnamed interest.

100 tons, three buildings for Arrowhead high school, San Bernardino, Calif., to unnamed interest.

Reinforcing Steel Pending

750 tons, Wayne county road commission, Detroit; new bids to be taken.

700 tons, Heart Mt. Canal, Shoshone project, Idaho; bids to reclamation bureau, Cody, Wyo., Feb. 10.

700 tons, retail store building, Sears, Roebuck & Co., Chicago.

625 tons, approaches and ramps, contract WB-6, Whitestone bridge, New York; bids Feb. 9.

325 tons, administration building, Harvard University, Cambridge, Mass.

300 tons, Illinois state road work; bids Feb. 7.

250 tons, West Chester teachers college, Pennsylvania, Consolidated Construction Co., Baltimore, low.

250 tons, Mansfield state teachers college, Pennsylvania, Sordini Construction Co., Wilkes-Barre, Pa., low.

230 tons, for live stock pavilion at State fairgrounds, Springfield, Ill.; Evans Construction Co., Springfield, low.

175 tons, senior high school, Richmond, Ind.

150 tons, ramps, west side elevated highway, 133-136th street, New York; George F. Driscoll Co., Brooklyn, low.

120 tons, Englewood postal station, Chicago.

100 tons, Home of Aged, Fall River, Mass.

100 tons, Washington state highway projects; bids in.

100 tons, store building, Oak Park, Ill.

Unstated tonnage, $250,000 state underpass, Missoula, Mont.; bids March 18.

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Pig Iron

Pig Iron Prices, Page 72

Pittsburgh—Producers who have been taking small deliveries over the past few weeks gradually are increasing volume of releases and some new orders are being placed as mills start up to replenish depleted inventories. Hand-to-mouth buying of recent weeks has finally worked itself down to the basic materials and as a result blast furnaces are showing a steadier operating rate. Foundries have not reached the rate at which steelmakers are operating, but the downward trend has been reversed.

Chicago—January pig iron shipments were about 10 per cent ahead of December, due entirely to the

more favorable comparison of the second half of the month. While a further small upturn is looked for in February, producers anticipate no sharp gains this quarter. Foundry operations are fairly steady but are spotty, with schedules usually varying from two to four days a week. New pig iron business is confined to small spot orders, almost entirely for immediate needs. The market is steady on such business at $24 furnace for No. 2 foundry and malleable.

Cleveland — Pig iron sellers report shipments are slightly better than during December. Farm equipment foundries are comparatively active, although a slight slowing up has been noticed. Demand from road equipment and other related foundries remains steady and is expected to continue for the next 60 to 90 days. New business consists of small individual carload orders for spot delivery with little contracting for future shipment. Auto foundries are still quiet awaiting releases from auto builders. Prices are unchanged. Otis Steel Co., Cleveland, blew out one blast furnace recently leaving one producing iron.

Boston — Still in limited lots, few orders appearing for more than a car at a time for early shipment, pig iron buying continues light and in line with consumption. Bulk of demand is from melters with light stocks. Larger consumers still are drawing on supplies without placing replacement tonnage. There is practically no buying for inventories or for shipment beyond the current quarter.

Philadelphia—Pig iron inventories of leading consumers are dwindling but little replacement buying is being done. Most consumers prefer to hold off and await developments. Buying is confined mostly to carlots and for actual needs. January shipments are estimated to have been about 75 per cent of December.

New York—Hand-to-mouth buying still features pig iron. Consumers are covering only upon definite requirements and are making little effort to lay in extra stocks. January business will show some slight gain over December.

Cincinnati—Shipments of pig iron were heavier this month than in December by a narrow margin. The melt is virtually unchanged, with demand for machine tool castings continuing leadership.

Buffalo—No substantial improvement has been noted in pig iron shipments but producers were encouraged by the greater amount of spot carload orders. Shipments for January are about equal to December.

Demand is still well below normal and judging from the amount of iron being accumulated a contraction in operations will be necessary in the near future unless demand shows appreciable expansion. Seven out of 15 stacks are active.

Producers are cautious in piling iron only of special grades which would be applicable to any increase in buying. Working schedules at foundries vary from three to five days a week, with a supplier of castings used in government projects maintaining a full-time week.

St. Louis — The moderate improvement in pig iron shipments during the first half of January has been maintained and total movement for the month is expected to be 10 to 15 per cent greater than in December.

The melt is also steady, but with new business being slowly placed with foundries and mills, some doubt exists as to whether the pace can be maintained for any great while.

A hopeful phase of the situation is the diminishing stocks at a number of plants. This fact is evidenced by increasing requests for immediate shipments, particularly among the smaller interests.

Birmingham, Ala. — The pig iron market shows slight improvement. Melters have a satisfactory volume of contracts, but are in need of shipping instructions which have come in somewhat greater volume this week. A distinctly optimistic note is evident among melters.

Bolts, Nuts, Rivets

Bolt, Nut, Rivet Prices, Page 71

Sales show little improvement and continue slow. Jobbers are placing

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occasional orders but are interested in holding stocks to a minimum. Producers see little prospect of an upturn in demand this quarter and expect business generally to continue quiet until railroads are more active in material and equipment purchases.

Farm equipment manufacturers, while experiencing some letdown in operations, continue among the best customers for bolts, nuts and rivets. Demand from structural fabricators is fairly steady though relatively quiet.

Scrap

Scrap Prices, Page 74

Pittsburgh—A little more interest has been shown in No. 2 melting steel, with a rise in the price resulting as had been predicted. Aside from this, Pittsburgh is experiencing the quietest market in years. Nominal prices continue in most grades because no domestic market exists. Current railroad offerings are not expected to come into Pittsburgh yards because of the strength of the export market. Practically all activity in the present market is confined to buying by dealers for contracts placed much earlier.

Chicago—Scrap continues dull here, but prices nominally are unchanged. Only small shipments of heavy melting steel are being made against old orders in view of the restricted rate of open-hearth operations, and prospects for additional mill buying, except on a limited scale, are poor. Heavy melting steel is bringing $13 or better in dealer trading, with prices ranging up to $14 on railroad lists.

Cleveland — Blast furnace material continues to move, with small lots of cast and heavy steel. Current sales are at unchanged prices. Interest is fixed on railroad lists closing this week, as an indication of the market position.

New York—With buying and shipments light scrap prices for domestic consumption are unchanged and not subject to much pressure. Foundry grades are especially dull, with consumers taking only small shipments. Most scrap coming out is bought for export at unchanged prices and with cargo space ample for current offerings little material is being accumulated on barges.

Philadelphia—The scrap market maintains practically the same appearance as for the past two or three weeks. No. 1 heavy melting steel is steady at $15 with some odd-lot business at this level. Some buyers are said to be picking up a few lots at about $14.50. Rumors also persist that a large sale was made recently at $15.50. Little definite upward movement is expected until mills resume at a better rate. Steel for export is quiet at $15 and $14, respectively, for No. 1 and No. 2.

Boston — Several scrap grades are slightly firmer, notably No. 2 cast for Eastern Pennsylvania and export. Skeleton is also stronger while No. 1 heavy melting steel for export is admittedly higher, with $14.50 dock bettered on some material. Buying is light, notably on foundry grades. Boat loading for export continues active with material moving against old foreign orders.

Detroit — With automobile production being curtailed sharply this week, February scrap lists probably will be even lighter, although most assembly lines now being shut down will resume Feb. 8. Scrap prices have shown no weakness in spite of the lack of trading.

No change is imminent in the steelmaking rate here, and there is a complete lack of interest in scrap purchases.

Buffalo—Except for a few small sales of No. 1 heavy melting material under the terms of the leading consumer the iron and steel scrap market remains in the doldrums.

Approximately 2000 tons more have been shipped to the principal mill, which allows dealers to clear against old contracts placed around the $20 level on a percentage basis to the amount of scrap they will contract for at $13 a ton. Under the arrangement the mill has received slightly better than 8000 tons on new contracts and a greater amount against old orders.

Cincinnati — The iron and steel scrap market has become quieter, even dealer transactions dwindling. Many dealers who have slowly built up yard stocks are now taking a sideline position until buying is resumed by mills, who now appear uninterested because of scrap inventories adequate for current operating rates. Miscellaneous sales are close to quotations, which remain nominal.

St. Louis — With mills and foundries still out of the market and dealer short interest heavily reduced, the market for iron and steel scrap is virtually at a standstill. Offerings have increased somewhat, and the tone of the market is easier than ten days or two weeks ago. Small dealers are becoming discouraged with waiting and are more disposed to part with their accumulations.

There is no distress scrap to speak of, and dealers with incoming material and no orders on which to apply it are laying it down in their yards. However, commercial yard stocks are still moderate and assortments incomplete.

Birmingham, Ala. — Scrap is in the doldrums. Prices are nominally unchanged and purchases are small and irregular, by foundry interests.

Seattle—Exporting interests are interested again in buying steel vessels for scrapping but the supply is limited on this coast. Japanese credits have eased considerably and exporters expect a fair movement to the Orient shortly. Tidewater stocks are fairly large. Prices are nomi-

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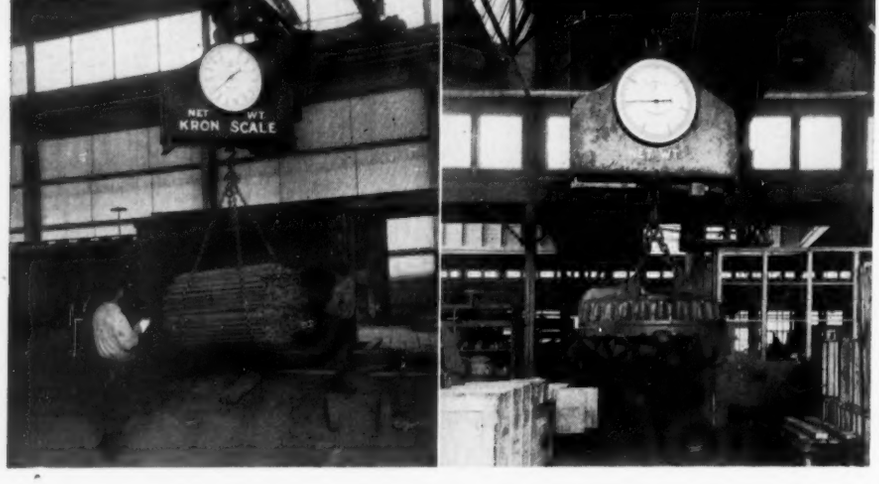

nally unchanged at $7.50 and $8. Any buying movement will result in higher levels, which dealers have been expecting for some time, especially in view of firmness in the East. Rolling mills are not interested as stocks are sufficient for present demands.

Warehouse

Warehouse Prices, Page 73

Cleveland — General trend in shipments out of warehouse is unchanged at comparatively low level. However, aggregate total shipments this month exceeds the comparative figure during December by a slight margin. Spotty deliveries by mills has aided distributors somewhat.

Chicago — While sales are fairly close to the rate a year ago from the standpoint of number of orders, the small volume of individual purchases is restricting total tonnages. Desire of consumers to hold down inventories is diverting some business from mills to jobbers. Sales are above December volume and are close to November rate.

New York — Warehouse volume during January has been disappointing. With numerous distributors aggregate sales hardly top December volume which was low. Steel entering into building and repairs, notably structurals, are moving slowly. Alloy and tool steels are steady in small lots. It is apparent that agitation for lower steel prices at Washington has retarded buying by some jobbers who would otherwise place heavier replacement orders.

Detroit — Warehouse business this month has been somewhat lower than in December, although there have been sporadic outbursts of good business, followed by unusually quiet periods. Some encouragement is gained from reports one of General Motors divisions' plans to spread tool and die work more evenly over the year and avoid last-minute rushes.

Boston—While some increase in the number of small orders was experienced by jobbers during January, volume of aggregate sales has been below expectations. Specialty lines are moving steadily, but in small lots, while standard items, material entering into construction especially, have not improved much. Jobbers are also buying sparingly.

Philadelphia—Some improvement was noted in warehouse trade after the middle of January but the total for the month is believed somewhat under December, which is a seasonal situation. Orders are still for small lots. Prices are being maintained by the larger interests.

St. Louis — Warehouse sales continue in further moderate gains over December, but volume is substantially below December a year ago. Orders are all small. All building items remain sluggish, with little hope for betterment before late spring.

Buffalo—Sales for January were a shade better than February, but still unsatisfactory. Trading was spotty. Sheets and bars are in best demand with little interest in heavy structurals or plates.

Cincinnati — Warehouse orders from industrial users continue light although the volume for January is better than in December. Other demand, especially for building, is dull.

Seattle—Spring buying has not developed and jobbers report only small lots out of stock. No item is outstanding. WPA projects are expected to call for increased volume within 30 days but industrial demand is disappointing. Prices are unchanged.

Iron Ore

Iron Ore Prices, Page 74

Cleveland — Stocks of Lake Superior iron ore at lower lake ports and furnaces Jan. 1, 1938 were approximately 9,370,000 tons more than on the comparable date last year. Total consumption in 1937 was 53,996,076 tons. The Lake Superior Iron Ore association reports:

	Tons
Consumed in November.....	2,734,504
Consumed in December.....	1,916,588
Decrease in December.....	817,916
Consumed in December, 1936..	4,551,379
Total consumed, 1937.....	53,996,076
Total consumed, 1936.....	44,639,318
On hand at furnaces Jan. 1...	34,815,965
On Lake Erie docks Jan. 1....	5,958,873
Total on hand at furnaces and Lake Erie docks Jan. 1	40,774,838
Reserve total Jan. 1, 1937....	31,402,148

Steel in Europe

Foreign Steel Prices, Page 73

London—(*By Cable*)—Steel markets in Great Britain continue quiet. Sheetmakers are seeking orders for domestic shipment and for export. The supply of semifinished steel is easier and the option for an extra January supply from the Continent has been called off. Steel plants are operating at capacity on accumulated orders, which are sufficient for several months.

The Continent reports an improving tendency following the official

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export price reduction by the European steel entente.

Steel output for France in 1937 was 7,902,000 tons compared with 6,708,000 tons in 1936. Pig iron total was 7,916,000 tons compared with 6,230,000 tons. December ingot output was 675,000 tons compared with 673,000 tons in November. December pig iron output was 679,000 tons compared with 558,000 tons in November.

Nonferrous Metals

Nonferrous Metal Prices, Page 72

New York — Weakness in nonferrous metal markets, which increased steadily, asserted itself Friday in a drop in copper prices to a flat 10-cent level and a decline in tin to the lowest levels recorded in over two years. Interest generally centered in political and Wall street developments.

Copper — Electrolytic copper was quoted at 10.00c, Connecticut, on Friday by both primary mine producers and custom smelters. Copper wire dropped ½-cent on bare and magnet and ⅜-cent on weatherproof; brass ingot base prices eased ½-cent, except on No. 1 yellow which eased ⅜-cent; copper and brass mill products eased ¼-cent on yellow brass and nickel silver, ⅜-cent on red brass and commercial bronze; ½-cent on copper and phosphor bronze, and scrap allowances proportionately. The decline in the primary market failed to stimulate buying.

Lead — Demand continued light with prices supported by the moderate business transacted during the first two weeks. The December statistical report showed unexpected production and stock increases. Prices held at 4.75c, East St. Louis.

Zinc — Some buying of forward metal came out but sellers restricted bookings due to uncertainty of future ore and production costs. Prime western held at 5.00c, East St. Louis.

Tin — Straits spot dropped on Friday to only 40.12½c, the lowest level recorded in a long time. Prices during the week were below replacement costs in the eastern market, tending to limit the amount of metal available.

Antimony — Spot prices held unchanged in a generally quiet market at 13.75c, New York, and 15.62½c, duty paid New York.

Much Ore From Chile

Baltimore—Ore arrivals here Jan. 12 to 19, inclusive, involved 21,800 tons of iron ore from Cruz Grande, Chile, which arrived Jan. 16, and 21,800 tons from the same port, Jan. 19.

Other arrivals comprised 1300 tons of manganese ore from Calcutta, India, Jan. 12; 5000 tons of chrome bearing iron ore from Masinioc, Jan. 16; and 1091 tons of chrome ore, Lourenco Marquis, Portugese East Africa, Jan. 13.

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Increase the efficiency and safety of your moveable pipe lines with Chiksan Ball Bearing Swing Joints. These easy turning metal joints are quickly connected into all kinds of pipe lines to provide pressure-tight connections that can be completely rotated without leaking. They are unaffected by heat, cold, and a variety of corrosive fluids. Available in flanged, threaded or welded ends, and in sizes from 1" to 12" (to 18" on special order) to safely handle pressures up to 4,000 pounds!

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Chiksan ball bearing SWING JOINTS

Activities of Steel Users, Makers

(*Continued from Page 26*)

W. Robinson, formerly president, Libbey Glass Co., has been elected president. Charles A. Pierson, president of the former Standard company, has been named vice president in charge of manufacturing operations and research. Harry H. Venable, associated with Standard sales for many years, has been made advertising and sales manager, and Ellsworth L. Tait, former assistant treasurer of the Libbey Glass Co., has been appointed treasurer.

♦

Coast Centerless Grinding Co., Ray F. Tissue, president, is moving into a large new plant at 761 East Slauson avenue, Los Angeles.

♦

Whipple & Choate Co., producer of ingot metals, Bridgeport, Conn., has moved into its new office building and metallurgical laboratory at 910-934 South avenue, near its plant.

♦

Laminated Shim Co. Inc., Long Island City, N. Y., has appointed Industrial Sales & Engineering Co., Houston, Tex., to act as its exclusive agent in the southwest.

♦

Monsanto Chemical Co., St. Louis, has acquired all the assets of the Fiberloid Corp., Springfield, Mass., producer of plastics and molding compounds.

♦

Bucyrus-Erie Co., South Milwaukee, Wis., has named W. L. Hartley, 7031 West Wisconsin avenue, Milwaukee, representative covering Wisconsin and upper Michigan.

♦

Lea Mfg. Co., Waterbury, Conn., has been appointed by General Abrasive Co. Inc., Niagara Falls, N. Y., as its exclusive representative in Connecticut and western Massachusetts for Lionite polishing grains.

♦

High Speed Hammer Co. Inc., Rochester, N. Y., has appointed the Canadian Fairbanks-Morse Co. Ltd. its exclusive representative in Quebec, in addition to Ontario, for its line of riveting hammers and precision drilling machines.

♦

Clees Valve & Engineering Co., Newark, N. J., is installing in its testing laboratory a boiler to provide steam at 2500 pounds per square inch. It will supplement existing equipment for supplying steam at 1500 pounds per square inch and hydraulic facilities for tests up to 10,000 pounds per square inch. The equipment is used in testing recent-

ly developed types of forged steel valves made in sizes up to 8 inches.

♦

Niles Rolling Mill Co. and the Youngstown Pressed Steel division of Mullins Mfg. Co. are moving their Detroit offices from 710 Stephenson building to 6460 Kercheval avenue, Detroit. W. Robert Wilson is district manager.

♦

SKF Steels Inc., New York, has appointed the New England High Carbon Wire Co. as sales representative in the Detroit territory. A complete line of tool steels will be carried at its warehouse, 6364 East Seven-Mile road, Detroit.

♦

Diehl Mfg. Co. observed its fiftieth anniversary Jan. 6-11 with a sales conference and opening of new conference and exhibition rooms at the plant in Elizabethport, N. J. The company is the electrical division of Singer Mfg. Co.

♦

McInnes Steel Co., Corry, Pa., producer of high-grade hammered crucible tool steels, has increased capital stock from $100,000 to $300,000 to provide for expansion. It plans to reopen several sales offices which have been closed in recent years.

♦

Trico Fuse Mfg. Co., Milwaukee, has appointed Industrial Power Equipment Co., Fort Worth, Tex.; Machinery & Equipment Sales Co., Baltimore, and Walter J. Sciutti, Jacksonville, Fla., as distributors of its fuses in their respective states.

♦

Bridgeport Brass Co., Bridgeport, Conn., has opened a new branch office in Atlanta, Ga., Milwaukee, and Pittsburgh. The company is building a new rolling mill to be ready for operation about the middle of the year.

♦

Eclipse Counterbore Co., Detroit, has appointed George O. Desautels Co., Indianapolis, with a branch office at Muncie, Ind., as representative in the state of Indiana, with the exception of the northwest corner of the state, and that portion of Kentucky bordering Indiana.

♦

Mitchell Specialty Co., Holmesburg, Philadelphia, which has been operating as a subsidiary of United Specialties Co., Detroit, since early last year when all its stock was acquired by the latter company, has been liquidated, and will hereafter be operated as the Mitchell division of United Specialties Co.

♦

Brooks-Payne-Osborne Equipment Co., Knoxville, Tenn., distributors for Bucyrus-Erie Co., South Milwaukee, Wis., and the Day Pulverizer Co., also of Knoxville, have consolidated to form the Brooks Equipment & Mfg. Co., with offices, factory and warehouses at 408-410 Davenport road, Knoxville.

♦

Rheem Mfg. Co., Richmond, Calif., has taken over the steel barrel manufacturing plant of Wackman Welded Wire Co. in Houston, Tex., and will transport the machinery and equipment to its own plant in Houston.

$11,000,000 Expansion For Sun Oil Co.

■ A program of plant expansion and development this year, to cost $11,000,000, has been announced by Sun Oil Co. The work will be in its two chief refineries, at Marcus Hook, Pa., and Toledo, O. The purpose is not only to increase capacity of present plants, but to adapt them to important new refining processes.

"As the materials to be used must be produced and fabricated especially for our purposes, it means that practically the entire expenditure will go into wages for labor," said J. Howard Pew, president.

Notes 30th Anniversary

■ Oliver United Filters Inc. celebrated 30 years of manufacturing filters with a supper dance at Hotel Leamington, Oakland, Calif., Jan. 10. Most of the company's 400 employes were present to give special recognition to the 109 who have been with the company ten years or more.

Addresses were made by E. L. Oliver, president and general manager, E. J. Sweetland, chairman, and by other executives. Oliver United Filters Inc. resulted from merger in 1928 of the Oliver Continuous Filter Co. and United Filters Corp. The company now operates in many foreign countries.

Equipment

Chicago — In the absence of large lists, business in machinery and equipment is made up entirely of small purchases. Volume of orders and inquiries is fairly steady but effects of quieter industrial situation are reflected in postponement of contemplated expansion programs in some instances.

Railroads are almost entirely out of the market, orders coming from the carriers representing equipment urgently needed and practically no action has been taken on machines for which bids were requested in the preparation of 1938 budgets.

Farm equipment manufacturers largely have completed expansion programs instituted last year and no large orders are in prospect soon. Small tool buying is dull, orders being sharply below the volume a year ago.

Seattle—Mining operators are planning for opening of season and inquiry has increased for dredges and machinery, particularly for Alaska projects. Industrial replacement volume is at low ebb with lumbering and logging on reduced schedules. Electrical and pumping equipment continue in best demand.

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Construction and Enterprise

Ohio

ALLIANCE, O.—Taylor-Young Airplane Co. has plans for expansion and improvements, including one or more one-story units. Cost with equipment $100,000.

DAYTON, O.—Duriron Co. Inc., Findlay street, Dayton, manufacturer of alloy castings, is taking bids on general contract for one-story foundry addition to house ferrous casting shop and grinding department. Cost $40,000.

WRIGHT FIELD, DAYTON, O.—War department, air corps, receives bids to 10 a.m., Feb. 4, for one bench type grinder, specification 50016-C dated June 5, 1936 and amendment No. 1 dated Dec. 21, 1937; one pedestal type grinder, specification 50016-C dated June 5, 1936 and amendment No. 1 dated Dec. 21, 1937; until 10 a.m., Feb. 7, for 1400 feet of seamless, chrome, molybdenum steel tubing, specification 57-180-2C dated April 17, 1933, in three sizes; until 10 a.m., Feb. 9, for 950 socket wrench extension bars and 3950 socket wrench handles in different lengths; delivery f.o.b. contractor's plant.

Pennsylvania

HARRISBURG, PA.—General state authority, 600 North Second street, Harrisburg, receives bids to 11 a.m., Feb. 8., for constructing new power plant with equipment as part of project at Western penitentiary, Pittsburgh. Boiler house equipment includes boilers, stokers, pumps, heaters, generator sets, switchboards, meters, and new motors. Total cost of project, which includes hospital and shop building, $480,000. Harry Viehman, Chamber of Commerce building, Pittsburgh, architect.

HARRISBURG, PA.—General state authority, 600 North Second street, takes bids to 11 a.m., Feb. 8, for constructing enlarged waterworks system for Danville state hospital, Danville, Montour county, Pa. Includes reconstructing water filter plant, six new rectangular filters, coagulating tank, cast-iron force main, two electrically-driven high lift pumps, wash water eductor, main line meter and auxiliary equipment. Total cost estimated at $92,000. C. E. Wunder, Architects building, Philadelphia, architect. C. E. Mebus, Glenside, Pa., engineer.

Massachusetts

BOSTON—E. M. Lowes Theatres, 216 Tremont street, Boston, plan central heating plant in theatre building at North Adams, Mass. Cost $130,000. Mowall & Rand, 261 Franklin street, Boston, architects.

New York

BROOKLYN, N. Y.—Signal corps procurement district, army base, Fifty-eighth street and First avenue, receives bids to Feb. 2 for 50,000 to 90,000 feet of submarine mine cable. (Circular 104)

NEW YORK—Vick Chemical Co., 122 East Forty-second street, New York, contemplates constructing chemical factory on Hope street, Stamford, Conn. Estimated cost $40,000.

New Jersey

BAYONNE, N. J.—Asiatic Petroleum Co., Bayonne, has purchased seven acres on Kill van Kull in the Constable Hook section of Bayonne and plans expanding its present plant, which adjoins on the north.

NEWARK, N. J.—Alligator Rubber Products Co. Inc., 239 Ridgewood avenue, Newark, contemplates constructing a factory later in the year.

Michigan

COMSTOCK, MICH.—Consumers Power Co., D. E. Karn, vice president and general manager, has awarded contract for construction of new steam generating station at Comstock, near Kalamazoo, which will house generator unit with 35,000-kilowatt capacity. Plant is designed large enough to hold a second unit of the same size.

Illinois

GENEVA, ILL.—City has plans under way for extensions and improvements in municipal electric power plant, including installing new diesel engine generating units and auxiliary equipment. Wells Engineering Co., court house, Geneva, consulting engineer.

Indiana

HUNTINGTON, IND.—City plans complete electrification of municipal waterworks station, including installing diesel engine generator units and auxiliary equipment. Survey and estimates of cost to be made by J. Y. Dehlstrand, Burlington, Iowa.

Maryland

BALTIMORE—Crown Cork & Seal Co., Eastern avenue and Kresson street, Baltimore, is considering establishing tin factory in Florida, site at Tampa now under consideration.

South Carolina

CHARLESTON, S. C.—True Blue Bottlers Inc., recently organized as an interest of A. F. Dorscher & Sons Co., 231 Meeting street, plans installing motors and controls, conveyors, loaders and other equipment in new automatically operated works at East Bay and Vernon streets. Cost over $100,000.

GREENWOOD, S. C.—J. B. Carr Co., Wilkesbarre, Pa., plans constructing baking products plant with daily capacity of 90,000 pounds. Work to begin in February. Cost $85,000.

Tennessee

CHATTANOOGA, TENN.—Lookout Oil & Refinery Co., 4608 Kirkland avenue, Chattanooga, plans constructing factory and power house. Estimated cost $100,000.

MEMPHIS, TENN.—FEA of public works, Kenneth Markwell, chief project engineer, Volunteer building, Chattanooga, receives bids March 2, for contract 23, electric equipment and circuits for substation E; contract 26, March 9, for overhead district transformers.

Louisiana

SHREVEPORT, LA.—Southern Bell Telephone & Telegraph Co. receives bids Feb. 7 for constructing proposed automatic dial telephone exchange building at Unadilla and Line avenues. Cost $90,000. Edward F. Neild, City Bank building, Shreveport, associate architect; Hentz, Adler & Shutze, Candler building, Atlanta, Ga., architects.

SPRINGHILL, LA.—City, E. T. Archer & Co., consulting engineer, New England building, Kansas City, Mo., will ask for bids in February or March for sanitary sewer system, disposal plant, water works extension and water supply. C of sewers, disposal plant and wa works, under one contract, $87,0 Water supply, under separate contract, $7000.

West Virginia

WESTON, W. VA.—Monongahela-West Penn Public Service Co., Fairmont, W. Va., plans new transmission lines in Freeman's creek area, vicinity of Weston. Work begins soon.

Missouri

CAPE GIRARDEAU, MO.—Chamber of commerce and Superior Products Co. have let general contract for erecting factory for manufacturing electrical appliances. Cost $70,000.

KANSAS CITY, MO.—United States Tool Corp. has been incorporated here with $100,000 capital to manufacture tools. Frank G. Buman, Louisiana, Mo., V. S. Williams, Bowling Green, incorporators.

ST. LOUIS—Seven-Up Bottling Co., Edward Lee Taylor, president, 1120 Montrose street, manufacturer and distributor of beverages, has announced expansion program, including building additions, new equipment and machinery. Cost $150,000.

WARRENSBURG, MO.—Missouri Public Service Co. granted blanket order by public service commission, Jefferson City, to construct electric transmission lines wherever needed in rural areas of 17 counties in which company operates.

Arkansas

FORT SMITH, ARK.—Sebastian County Mutual Power Co. was recently formed by coal operators of the Bonanza, Jenny Lind, Hackett and Excelsior fields to construct a generating plant and electrical distribution system to supply power to mines in those fields. Estimated cost about $200,000.

MALVERN, ARK.—Sturgis Lumber Co. acquired tract on highway 67 for constructing sawmill, planer and dry kiln.

Wisconsin

MADISON, WIS.—Madison Gas & Electric Co., 100 North Fairchild street, plans 20,000-kilowatt hour steam power plant addition. Cost $1,800,000.

MADISON, WIS.—State highway commission, E. L. Roettiger, chief engineer, takes bids to Feb. 18 for constructing general highway laboratory, research and service building, including shop for manufacturing signs and signals. Appropriation is $175,000.

WISCONSIN RAPIDS, WIS.—Central Tractor & Equipment Co. has been incorporated here with a capital stock of $20,000 to distribute road machinery and contractors' supplies.

Minnesota

BRAHAM, MINN.—Village, W. J. Olson, clerk, has completed plans and will apply for WPA funds to finance constructing sewer system and disposal plant, including clarifiers, digesters and sludge bed. Estimated cost $60,000.

GAYLORD, MINN.—City, L. G. Becker, city clerk, is considering a recommendation for the construction of a filtration plant.

HENNING, MINN. — Village, S. A. Aune, clerk, has applied to WPA for

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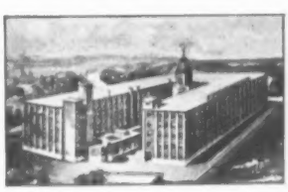

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PERIODICAL ROOM

funds to aid financing the construction of sewage disposal plant and sewers. Druar & Millnowski, 830 Globe building, St. Paul, consulting engineers.

MINNEAPOLIS—Charles E. Hires Co., Philadelphia, manufacturer of root beer, has leased factory for bottling and distributing plant and will spend $100,000 for machinery and equipment.

MINNEAPOLIS—Charles E. Hires Co., Co., Foshay Tower building, has been organized to manufacture automatic oil burners, oil-burning domestic hot water heaters, and heaters for trailers and railroad refrigerator cars.

MINNEAPOLIS — Minneapolis Gas Light Co., Harry K. Wrench, vice president and general manager, will spend $432,000 for new construction and improvements in 1938, including $104,600 for improvements to the distribution system, $115,700 for compressors and transmission lines, $86,700 for new meter equipment and $67,600 for plant improvements.

PARKERS PRAIRIE, MINN.—City, L. A. Woell, clerk, will hold a special election Feb. 8 on $12,000 bond issue to finance constructing sewage disposal plant.

ST. PAUL—Universal Traffic Signal Co., Pioneer building, has been incorporated here to manufacture traffic signal equipment. Richard Ordway, Alvin O. Olafson, and Milton C. Lightner, incorporators.

Texas

BROWNSVILLE, TEX.—Missouri Pacific lines plan immediate construction of improvements including vegetable washing and packing plant in Victoria heights, installing modern equipment. Total cost of improvements $50,000.

CORPUS CHRISTI, TEX.—Mammoth Producing & Refining Co., Corpus Christi, plans constructing oil refinery with capacity of 3500 barrels daily. Estimated cost $250,000.

KERRVILLE, TEX.—Texas Power & Light Co., Dallas, plans extensions of transmission lines in vicinity of Kerrville for rural electric service.

Kansas

LEAVENWORTH, KANS.—Board of water commissioners, E. H. Connor, chairman, will complete plans soon for constructing 4,000,000-gallon-per-day filter plant, new pumps and intake. Cost $290,000. Black & Veatch, 4706 Broadway, Kansas City, Mo., city engineer. (Noted in STEEL for Dec. 20, 1937).

TOPEKA, KANS.—Kaw Valley Cooperative Co., Lloyd L. Bryson, secretary, Scranton, will take bids about Feb. 15, for constructing 375 miles of rural transmission lines in Jackson, Douglas, Osage and Waubaunsee counties. Estimated cost $395,000. Paulette & Wilson, 311 Farmers Union building, Salina, consulting engineers.

South Dakota

LEAD, S. DAK.—Homestake Mining Co., Guy N. Bjorge, general manager, will remodel sand plant, which will take two years to complete. Cost $300,000.

Iowa

AMES, IOWA—State board of education, M. R. Pierson, superintendent, state house, Des Moines, takes bids to 11 a.m., Feb. 9, for steam generating unit with auxiliaries. Specifications obtainable from Commercial Testing & Engineering Co., Chicago, Ill., or owner.

CLINTON, IOWA—Clinton Culvert & Supply Co. has been incorporated here to manufacture metal culvert and pipe. F. A. Van Vleck, C. W. Laughlin, R. W. Primmer, and E. A. Seitz, incorporators.

MASON CITY, IOWA—Peoples Gas & Electric Co. plans power plant improvements, constructing gas mains and 60 miles rural transmission lines. Cost about $300,000. (Noted in STEEL for Jan. 17, 1938).

NEWELL, IOWA—City, care of mayor, is considering constructing water softening plant. Type and cost not yet determined.

NEW LONDON, IOWA—City, care of mayor, is considering constructing water purifying plant. Type and cost not yet determined.

OTTUMWA, IOWA—Horace A. Brown, superintendent of waterworks, has recommended to city council constructing sewage treatment plant. Thomas P. Sullivan is city clerk.

SIOUX CITY, IOWA—Chemical Foundation Inc., Leon E. Champer, plans constructing power alcohol plant. Cost about $500,000.

SIOUX CITY, IOWA — Fitzgerald Equipment Co., F. I. Fitzgerald, president, has been organized to distribute road machinery, contractors' equipment and industrial equipment.

WATERLOO, IOWA — Chamberlain Corp., N. L. Etten, vice-president and general manager, plans constructing factory addition to house machinery for rubber wringer roll division.

Nebraska

ALLIANCE, NEBR.—City, R. W. Laing, city clerk, takes bids to Feb. 3 on power plant equipment, including new boiler and steam generator with auxiliaries. Estimated cost $75,000. Also takes bids on constructing three wells. Estimated cost $6500. Black & Veatch, 4706 Broadway, Kansas City, Mo., consulting engineers. (Noted in STEEL for Nov. 22, 1937).

BLAIR, NEBR.—City will take bids soon for one internal combustion engine generator unit. Black & Veatch, 4706 Broadway, Kansas City, Mo., consulting engineers.

COZAD, NEBR.—Western Public Service Co., Scottsbluff, has filed application with state railway commission to construct transmission line near Cozad.

ELGIN, NEBR.—Interstate Power Co. of Nebraska, Dubuque, Iowa, is considering early rebuilding of portion of power plant at Elgin used for standby service which was recently damaged by fire.

FRANKLIN, NEBR.—Republican Valley Power & Irrigation district, Oswin Keifer, Bostwick, secretary, has applied to REA for funds to finance constructing rural transmission lines.

OMAHA, NEBR.—War department, Capt. Herbert B. Loper, district engineer, 1424 City National Bank building, is taking bids to 2 p.m., Feb. 4, for one centrifugal dredging pump, 14-inch suction, 12-inch discharge.

OMAHA, NEBR.—Nebraska Power Co., J. E. Davidson, president, has filed application with state railway commission to construct transmission lines near Blair, Hooper and Yutan. Clarence Minard is company engineer.

ORD, NEBR.—North Loup River Public Power & Irrigation District, E. H. Dunmire, engineer-manager, has been granted permission by state railway commission to construct 24 miles rural transmission line between Olean and Burwell. Black & Veatch, 4706 Broadway, Kansas City, Mo., consulting engineers. (Noted in STEEL for Jan. 10, 1938).

Montana

GLASGOW, MONT. — Garages and shops of Great Falls Coach lines and Valley Motor Supply Co. here were damaged by fire.

KALISPELL, MONT.—Yale Oil Corp. has started constructing oil refinery which will have capacity of 1000 barrels per day. Plant will be completed April 1.

Idaho

POCATELLO, IDAHO—Idaho Refining Co., recently incorporated, has acquired a site and proposes early construction of a plant here. A. H. Kelson, president, Salt Lake City; K. W. Yates, Salt Lake City, secretary.

SANDPOINT, IDAHO—City has been alloted $47,805 by WPA for proposed water system improvements.

Pacific Coast

BURBANK, CALIF.—Lockheed Aircraft Co. will construct new factory building addition at 1705 Victory boulevard. Cost $18,000.

LOS ANGELES—Boston Iron Works will erect new plant addition at 226 West Thirty-seventh place. Cost $15,000.

LOS ANGELES—Southwestern Steel & Metal Co. has been incorporated in Los Angeles county with 51,000 shares capital stock. Sidney H. Weiss, J. Cole and Milton Maharam, incorporators.

SAN FRANCISCO—Matson Navigation Co., 215 Market street, plans installing motors and controls, conveyors, electric hoists and other equipment in new one-story machine and mechanical shop at Bryant and Beale streets. Cost $100,000. Major Theili, 580 Market street, consulting engineer.

LYNDEN, WASH.—City council is considering proposed municipal light and power plant.

SEATTLE—Seattle Oxygen Co. plans constructing bottling plant addition with modern equipment at 5510 E. Marginal way. Cost $17,500.

TACOMA, WASH.—City council has passed ordinances appropriating $121,700 for duplicate switching equipment facilities at city's Cushman No. 2 power plant. Will call for bids soon.

Canada

MEDICINE HAT, ALTA.—North West Distillery Co. Ltd., Medicine Hat, is having plans prepared for the construction of a plant for manufacturing industrial alcohol. Includes purchasing new equipment. Estimated cost $130,000.

HAMILTON, ONT.—Steel Co. of Canada, H. G. Hilton, works manager, Wilcox street, Hamilton, Ont., plans constructing three-story benzol distillation plant to replace one destroyed by fire. Owners interested in prices of complete equipment. Cost $250,000.

MONTREAL, QUE.—Meagher Bros. Co. Ltd., Britannia street, Montreal, Que., is having plans prepared by E. Barott, 606 Cathcart street, Montreal, architect, for an addition to its distillery. Estimated cost $50,000.

QUEBEC, QUE.—General Traders Corp. Ltd., 37 Crown street, Quebec, is having plans prepared for constructing a plant for the manufacture of charcoal, peat and chemicals. Cost $50,000.